U.S. Department of Transportation

BUDGET ESTIMATES

FISCAL YEAR 2024

PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION

SUBMITTED FOR THE USE OF
THE COMMITTEE ON APPROPRIATIONS

U.S. DEPARTMENT OF TRANSPORTATION

PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION

FY 2024 BUDGET REQUEST

TABLE OF CONTENTS

I: Overview

U.S. DEPARTMENT OF TRANSPORTATION
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
FY 2024 ADMINISTRATOR'S OVERVIEW

The Pipeline and Hazardous Materials Safety Administration (PHMSA) **requests $387.3 million. When combined with the $200 million in advance appropriations provided in Division J of the Infrastructure Investment and Jobs Act (IIJA), PHMSA's total budgetary resources are $587.3 million, which** will continue its critical work improving safety, supporting underserved communities, preserving our environment, and reducing impacts to climate.

PHMSA will respond to safety risks from increased U.S. oil and gas production and export, and will improve **pipeline safety**, under a planned reauthorization of the Protecting Our Infrastructure of Pipelines and Enhancing Safety (PIPES) Act for Fiscal Year (FY) 2024, with investments in new safety standards and safety regulations, state safety inspectors to inspect intrastate pipelines and facilities, new investments to attract and retain the best and brightest safety engineers, additional research to keep up with a transition to new forms of energy such as hydrogen fuels and carbon recapture, and added outreach to ensure the safety of the most vulnerable communities.

In the third year of the IIJA, the **Natural Gas Distribution Infrastructure Safety and Modernization Grant Program will reach underserved communities** with repair, rehabilitation, and replacement of natural gas distribution pipelines. PHMSA will issue its third Notice of Funding Opportunity (NOFO) in FY 2024, providing important funding to reduce threats from aged and failing gas pipes, reducing methane emissions from pipelines that threaten our environment, and ensuring safe delivery of energy to homes and businesses in underserved communities.

PHMSA will improve **hazardous materials safety** by continuing to register hazardous materials shippers and set safety standards for more than 40,000 companies transporting regulated hazardous materials, including the packaging and delivery of energy products and other hazardous products, by air, highway, rail, and water. These products annually account for more than 3.3 billion tons of regulated hazardous materials transported with a value of more than $1.9 trillion. In FY 2024, PHMSA will respond to an increase in demand for the transport of space cargo hazardous materials that are ultimately destined for launch to outer space on U.S. flagged launch vehicles and increase PHMSA's community safety grants program to help those underserved communities most impacted by the movement of crude oil by road and rail.

Following are highlights of PHMSA's FY 2024 Budget request:

- **$21.50 million increase for states' pipeline inspections (Pipeline Safety)** of intrastate lines that are moving more and more product in response to international demand for U.S. natural gas and increased demand for petroleum products. PHMSA can reimburse states for up to 80 percent of their inspections; however, current funding only supports approximately a 55 percent reimbursement rate. This additional funding will allow states to conduct robust safety inspections.

- **$4.00 million for implementing pipeline safety mandates from the PIPES Act.** This additional funding will allow PHMSA to complete the open safety mandates and studies, respond to new pipeline uses such as those for clean energy movement like hydrogen and carbon capture, and improve pipeline safety information systems.

- **$2.00 million for adoption of safety management systems (Pipeline Safety)**. PHMSA will provide regulated operators with guidance on implementation of a safety management system (SMS). In FY 2024, PHMSA will expand outreach efforts to advance SMS, especially in underserved communities, helping these communities that oftentimes are facing the highest risks from pipelines.

- **$1.00 million for recruitment and retention incentives for hard to fill inspection and enforcement staff (Pipeline Safety)** including special pay rates, student loan repayment, tuition reimbursement, and recruitment and retention incentives to inspectors and engineers. This increases the amounts enacted in FY 2023.

- **$589.50 thousand for five additional engineering positions (Pipeline Safety)** for liquified natural gas (LNG) siting reviews and to complete important safety research. PHMSA has taken on increased responsibilities for LNG facility siting reviews, and these additional staff will ensure prompt and safe reviews, allowing the facilities to be completed in a timely manner, fully adhering to all safety regulations while supporting this important economic engine.

- **$3.00 million to increase Community Safety Grants (Hazardous Materials)** to the authorized level to better prepare underserved communities for the risks of moving crude by rail and other hazardous materials near their homes and businesses.

- **$1.18 million for outreach, training, and compliance (Hazardous Materials) including six positions** to streamline the movement of hazardous materials onboard spacecraft/cargo to and from U.S. space programs. The additional staff will evaluate hazardous materials packaging to expedite the review and issuance of special permits to facilitate space launches, helping to maintain the our nation's leading position in space.

Following is a programmatic summary of PHMSA's FY 2024 request:

$428.23 million for Pipeline Safety consisting of 247 inspection and enforcement staff and 132 safety professionals. Important Pipeline Safety investments include:

- **$200.00 million for the Natural Gas Distribution Infrastructure Safety and Modernization Grant Program** that 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 program will accelerate their repair, rehabilitation, or replacement, improving safety and access to energy in these communities.

- **$123.67 million for operations** including five added research and engineering professionals to complete the added work related to the rapid growth of U.S. natural gas production and export and completing safety reviews for new LNG export facilities as well as the development and implementation of new regulations covering LNG, methane, carbon dioxide, and hydrogen pipelines, and underground storage facilities.

- **$89.56 million for grant programs** that will 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 ($82.00 million), Underground Natural Storage Grants ($5.00 million), State Damage Prevention Grants ($1.50 million), and State One-Call Grants ($1.06 million)**.

- **$15.00 million for research** including developing failsafe delivery systems that preserve the environment as the U.S. moves to cleaner and renewable energy sources. Pipeline Safety research will **focus on incidents caused by corrosion, material failure, and equipment failure**, which cause 61 percent 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**.

$127.38 million for Hazardous Materials Safety and **Emergency Preparedness Grants** including the existing 82 regional inspectors and outreach staff, and 159 safety professionals. The request includes ten outreach staff 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. The request includes six new safety professionals to improve permitting and manage the increased demand for shipments of hazardous materials spacecraft/cargo to and from the U.S. for space launches. Notable Hazardous Materials Safety investments include:

- **$68.97 million for operations,** including increasing demand **for renewable energy shipments like lithium-ion battery transportation, and new demand for moving electric vehicle batteries**.

- **$50.50 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.

- **$7.57 million for research**, including work in cooperation with the U.S. 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.

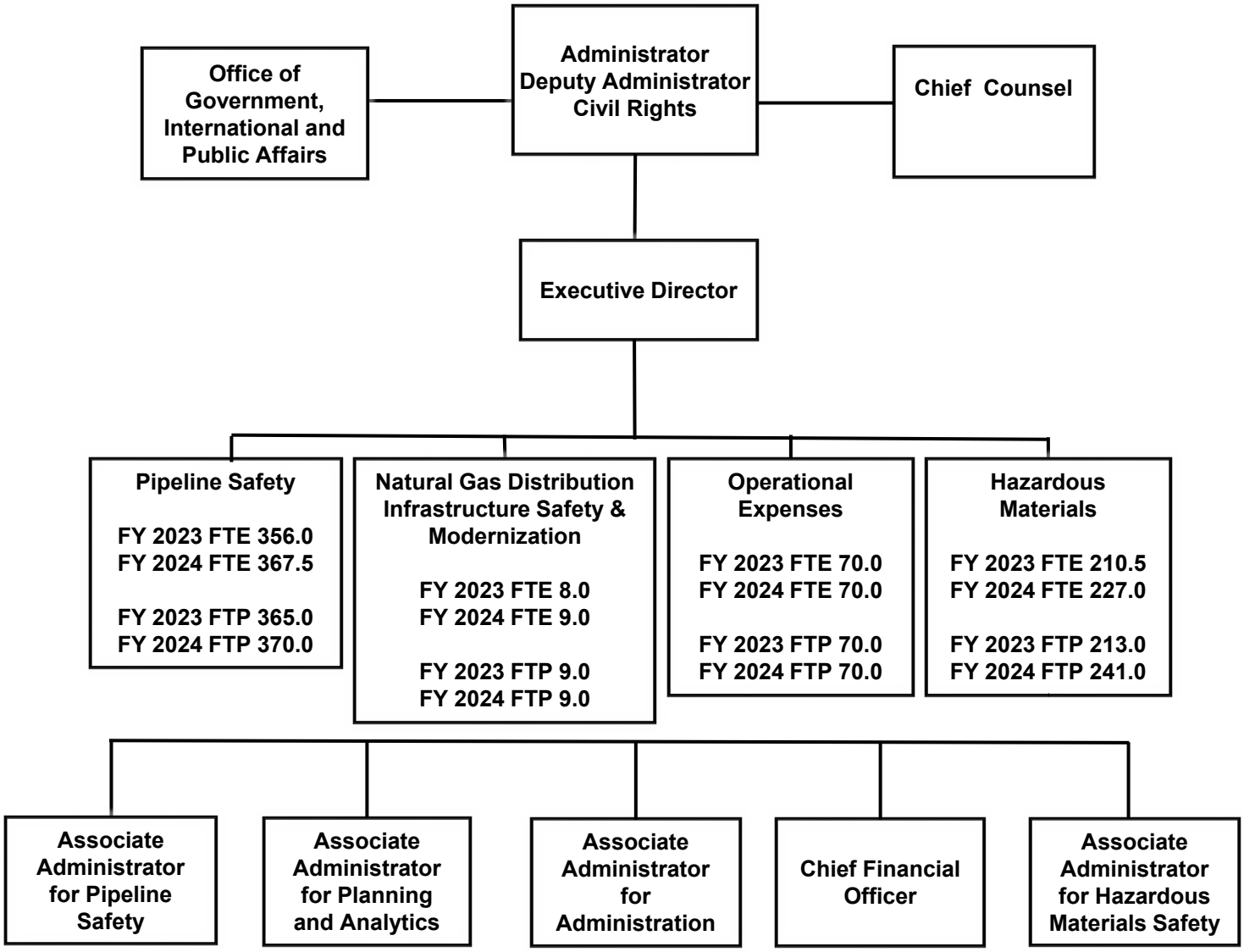
$31.68 million for Operational Expenses including 70 safety professionals working to support a safety management organization that promotes safe deliveries by all modes of transportation including pipeline. Important investments include:

- **Continuing an investment in leadership development** by building a cadre of safety leaders for PHMSA in FY 2024 and beyond via new and existing agency-wide leadership development programs.

- **Continuing recruitment and retention programs** to ensure that PHMSA can **attract and retain the highest-quality safety professionals**. The increased demand for workers in the U.S. domestic energy industry requires PHMSA to design and implement recruitment and retention incentives such as special pay rates, tuition reimbursement, and student loan repayment. PHMSA will continue to expand these critical programs in FY 2024.

- **Awarding Pipeline Emergency Response Grants ($2.50 million) and Information Grants to Communities ($2.00 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 2023 President's Budget and FY 2024 Request
FTE Totals: FY 2023 President's Budget (w/IIJA Oblim.) – 644.5 / FY 2024 Request – 673.5
FTP Totals: FY 2023 President's Budget (w/IIJA Oblim.) – 673.5 / FY 2024 Request – 690.0



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II: Budget Summary Tables

EXHIBIT II-1
FY 2024 BUDGET AUTHORITY
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
($000)

ACCOUNT NAME	M / D	(A) FY 2022 ACTUAL	(B) FY 2023 ENACTED	(D) FY 2024 BASELINE ESTIMATES	(E) FY 2024 PROGRAM CHANGES	(F) FY 2024 PRES. BUDGET
PIPELINE SAFETY		$ 182,650	$ 190,385	$ 196,686	$ 31,542	$ 228,228
Pipeline Safety Fund	**D**	146,600	153,985	160,286	30,542	$ 190,828
Underground Natural Gas Storage Fund	**D**	8,000	7,000	7,000	-	7,000
Liquefied Natural Gas Siting Fund	**D**	400	400	400	-	400
Oil Spill Liability Trust Fund	**D**	27,650	29,000	29,000	1,000	30,000
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets	**D**	(155,000)	(161,385)	(167,686)	(30,542)	(198,228)
HAZARDOUS MATERIALS SAFETY		$ 66,829	$ 70,743	$ 74,566	$ 5,988	$ 80,554
General Fund	**D**	$ 66,829	$ 70,743	$ 74,566	$ 5,988	$ 80,554
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets		-	-	-	-	-
EMERGENCY PREPAREDNESS GRANTS		$ 28,318	$ 28,318	$ 28,318	$ 18,507	$ 46,825
Emergency Preparedness Fund (Mandatory)	**M**	28,318	28,318	$ 28,318	$ 18,507	$ 46,825
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets		-	-	-	-	-
OPERATIONAL EXPENSES		$ 29,100	$ 29,936	$ 31,681	$ -	$ 31,681
General Fund	**D**	$ 29,100	$ 29,936	$ 31,681	$ -	$ 31,681
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets		-	-	-	-	-
Gross New Budget Authority		**$ 306,897**	**$ 319,382**	**$ 331,251**	**$ 56,037**	**$ 387,288**
Recissions		**-**	**-**	**-**	**-**	**-**
Transfers		**-**	**-**	**-**	**-**	**-**
Offsets		**(155,000)**	**(161,385)**	**(167,686)**	**(30,542)**	**(198,228)**
NET NEW BUDGET AUTHORITY REQUESTED:		**$ 151,897**	**$ 157,997**	**$ 163,565**	**$ 25,495**	**$ 189,060**
[Mandatory BA]		$ -	$ 28,318	$ 28,318	$ 18,507	$ 46,825
[Discretionary BA]		123,579	129,679	135,247	6,988	142,235
[Obligation Limitation]		28,318	-	-	-	-
Supplemental Funding						
IIJA Supplemental (Division J)		$ 200,000	$ 200,000	$ 200,000	$ -	$ 200,000
Natural Gas Distribution Infrastructure Safety & Modernization	**D**	200,000	200,000	200,000	-	200,000
Grand Total, All Appropriations		**$ 351,897**	**$ 357,997**	**$ 363,565**	**$ 25,495**	**$ 389,060**

EXHIBIT II-2
FY 2024 TOTAL BUDGETARY RESOURCES BY APPROPRIATION ACCOUNT
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

ACCOUNT NAME	M / D	(A) FY 2022 ACTUAL	(B) FY 2023 ENACTED	(D) FY 2024 BASELINE ESTIMATES	(E) FY 2024 PROGRAM CHANGES	(F) FY 2024 PRES. BUDGET
PIPELINE SAFETY		182,650	190,385	$ 196,686	$ 30,542	$ 228,228
Pipeline Safety Fund	D	146,600	153,985	$ 160,286	$ 30,542	$ 190,828
Underground Natural Gas Storage Fund	D	8,000	7,000	7,000	-	7,000
Liquefied Natural Gas Siting Fund	D	400	400	400	-	400
Oil Spill Liability Trust Fund	D	27,650	29,000	29,000	1,000	30,000
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets	D	(155,000)	(161,385)	(167,686)	(30,542)	(198,228)
HAZARDOUS MATERIALS SAFETY		$ 66,829	$ 70,743	$ 74,566	$ 5,988	$ 80,554
General Fund	D	$ 66,829	$ 70,743	$ 74,566	$ 5,988	$ 80,554
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets		-	-	-	-	-
EMERGENCY PREPAREDNESS GRANTS		$ 28,318	$ 28,318	$ 28,318	$ 18,507	$ 46,825
Emergency Preparedness Fund	M	$ 28,318	$ 28,318	$ 28,318	$ 18,507	$ 46,825
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets		-	-	-	-	-
OPERATIONAL EXPENSES		$ 29,100	$ 29,936	$ 31,681	$ -	$ 31,681
General Fund	D	$ 29,100	$ 29,936	$ 31,681	$ -	$ 31,681
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets		-	-	-	-	-
TOTAL BASE APPROPRIATION		**$ 306,897**	**$ 319,382**	**$ 331,251**	**$ 55,037**	**$ 387,288**
Gross New Budgetary Resources		$ 306,897	$ 319,382	$ 331,251	$ 56,037	$ 387,288
Rescissions		-	-	-	-	-
Transfers		-	-	-	-	-
Offsets		(155,000)	(161,385)	(167,686)	-	(198,228)
TOTAL BUDGETARY RESOURCES:		**$ 306,897**	**$ 319,382**	**$ 331,251**	**$ 56,037**	**$ 387,288**
[Mandatory]		$ 28,318	$ 28,318	$ 28,318	$ -	$ 46,825
[Discretionary]		278,579	291,064	302,933	37,530	340,463
[Obligation Limitation]		28,318	28,318	-	-	-
Supplemental Funding						
IIJA Supplemental (Division J)		**$ 200,000**	**$ 200,000**	**$ 200,000**	**$ -**	**$ 200,000**
Natural Gas Distribution Infrastructure Safety and Modernization	D	$ 200,000	$ 200,000	$ 200,000	$ -	$ 200,000
Grand Total, All Appropriations		**$ 506,897**	**$ 519,382**	**$ 531,251**	**$ 56,037**	**$ 587,288**

EXHIBIT II-3
FY 2024 BUDGET REQUEST BY DOT STRATEGIC AND ORGANIZATIONAL GOALS
Appropriations, Obligation Limitation, and Exempt Obligations
Pipeline and Hazardous Materials Safety Administration
($000)

	Safety	Economic Strength	Equity	Climate & Sustainability	Transformation	Organizational Excellence	Total
Discretionary Appropriations							
Pipeline Safety	$ 222,228		$ 1,000	$ 5,000			$ 228,228
Hazardous Materials Safety	77,544	750	500	1,760			80,554
Emergency Preparedness Grants	46,825						46,825
Operational Expenses	31,681						31,681
IIJA Supplemental (Division J)							
Natural Gas Distribution Infrastructure Safety & Modernization	60,000	40,000	40,000	60,000			200,000
TOTAL	$ 438,278	$ 40,750	$ 41,500	$ 66,760	$ -	$ -	$ 587,288
	Safety: Make our transportation system safer for all people. Work toward a future where transportation-related serious injuries and fatalities are eliminated.	**Economic Strength and Global Competitiveness:** 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.	**Equity**: Reduce inequities. Support and engage people and communities to promote safe, affordable, accessible, and multimodal access to opportunities and services while reducing transportation-related disparities, adverse community impacts, and health effects.	**Climate & Sustainability**: 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.	**Transformation**: 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.	**Organizational Excellence**: 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.	

EXHIBIT II-4
FY 2024 OUTLAYS
Pipeline and Hazardous Materials Safety Administration
($000)

	M / D	(A) FY 2022 ACTUAL	(B) FY 2023 ENACTED	(C) FY 2024 PRES. BUDGET
PIPELINE SAFETY		$ 201,565	$ 184,841	$ 222,137
Pipeline Safety Fund	*D*	$ 163,332	$ 149,671	$ 183,882
Underground Natural Gas Storage Fu	*D*	4,933	7,510	7,140
Liquefied Natural Gas Siting Fund	*D*	-	-	-
Oil Spill Liability Trust Fund	*D*	33,300	27,661	31,115
HAZARDOUS MATERIALS SAFETY	*D*	62,930	69,991	77,914
EMERGENCY PREPAREDNESS GRANTS		$ 23,232	$ 26,808	$ 64,082
Mandatory	*M*	23,232	26,808	64,082
Discretionary	*D*			
OPERATIONAL EXPENSES	*D*	$ 25,674	$ 29,668	$ 31,123
TOTAL		**$ 313,401**	**$ 311,309**	**$ 395,256**
Mandatory		*23,232*	*26,808*	*64,082*
Discretionary		*290,169*	*284,501*	*331,174*
IIJA Supplemental (Division J)	*D*	$ 1,306	$ 10,494	$ 28,800
Natural Gas Distribution Infrastructure Safety and		1,306	10,494	28,800
Grand Total, Outlays from all Appropriations		**$ 314,706**	**$ 321,803**	**$ 424,056**

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

			Baseline Changes										
PHMSA Summary	**FY 2022 Actual**	**FY 2023 Enacted**	**Annualization of Prior Pay Raises**	**Annualization of new FY 2023 FTE**	**FY 2024 Pay Raises**	**Adjustment for Compensable Days (261 days)**	**GSA Rent**	**WCF Increase/ Decrease**	**Inflation and Other Adjustments to Base**	**FY 2024 Baseline Estimate**	**Program Increases/ Decreases**	**FY 2024 President's Budget**
PERSONNEL RESOURCES	**545**	**645**		**13**						**657.0**	**16.5**	**673.5**
Direct FTE	545	645		13						657.0	16.5	673.5
FINANCIAL RESOURCES												
OPERATIONS												
Salaries and Benefits	$ 105,588	$ 115,913	$ 1,331	$ 1,812	$ 4,628	$ 475	$ -	$ -	$ (93)	$ 124,066	$ 3,458	$ 127,524
Travel	5,439	5,973	-	178	-	-	-	-	122	6,273	310	$ 6,583
GSA Rent	7,556	5,085	-	163	-	-	(617)	-	93	4,724	215	$ 4,939
Communications, & Utilities	581	592	-	-	-	-	-	-	12	604	-	$ 604
Other Services:												
-Other	9,263	10,103	-	496	-	-	-	-	147	10,746	711	$ 11,457
-WCF	4,963	5,054	-	-	-	-	-	441	-	5,495	-	$ 5,495
-WCF IT	10,007	12,759	-	-	-	-	-	1,138	4	13,901	-	$ 13,901
-WCF Rent	-	2,338	-	-	-	-	-	1,107	-	3,445	-	$ 3,445
Supplies	709	525	-	-	-	-	-	-	10	535	-	$ 535
Equipment	519	863	-	113	-	-	-	-	18	994	148	$ 1,142
Operations Subtotal	**$ 144,624**	**$ 159,205**	**$ 1,331**	**$ 2,762**	**$ 4,628**	**$ 475**	**$ (617)**	**$ 2,686**	**$ 313**	**$ 170,783**	**$ 4,842**	**$ 175,625**
PROGRAMS												
Contract Safety Programs												
Pipeline Safety	$ 23,546	$ 23,963	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 23,963	$ 6,003	$ 29,966
Hazardous Materials Safety	9,098	8,561	-	-	-	-	-	-	-	8,561	2,184	$ 10,745
Emergency Preparedness Grants	727	727	-	-	-	-	-	-	-	727	-	$ 727
Natural Gas Distribution Infrastructure Safety and Modernization Grants	3,214	2,238	-	-	-	-	-	-	(301)	1,937	-	$ 1,937
Operational Expenses	4,572	4,572	-	-	-	-	-	-	592	5,164	-	$ 5,164
Contract Safety Programs Subtotal	**$ 41,157**	**$ 40,061**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 291**	**$ 40,352**	**$ 8,187**	**$ 48,539**
Research and Development												
Pipeline Safety	$ 13,000	$ 12,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 12,500	$ 2,500	$ 15,000
Hazardous Materials Safety	7,570	7,570	-	-	-	-	-	-	-	7,570	-	$ 7,570
Research and Development Subtotal	**$ 20,570**	**$ 20,070**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 20,070**	**$ 2,500**	**$ 22,570**
Grants												
Pipeline Safety	$ 68,558	$ 68,058	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 68,058	$ 21,500	$ 89,558
Hazardous Materials Safety	4,500	4,500	-	-	-	-	-	-	-	4,500	500	$ 5,000
Emergency Preparedness Grants	26,988	26,988	-	-	-	-	-	-	-	26,988	18,507	$ 45,495
Natural Gas Distribution Infrastructure Safety and Modernization Grants	196,000	196,000	-	-	-	-	-	-	-	196,000	-	$ 196,000
Operational Expenses	4,500	4,500	-	-	-	-	-	-	-	4,500	-	$ 4,500
Grants Subtotal	**$ 300,546**	**$ 300,046**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 300,046**	**$ 40,507**	**$ 340,553**
Programs Subtotal	**$ 362,273**	**$ 360,177**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 291**	**$ 360,468**	**$ 51,194**	**$ 411,662**
TOTAL	**$ 506,897**	**$ 519,382**	**$ 1,331**	**$ 2,762**	**$ 4,628**	**$ 475**	**$ (617)**	**$ 2,686**	**$ 604**	**$ 531,251**	**$ 56,036**	**$ 587,287**
Total Requested Budget Authority	**$ 506,897**	**$ 519,382**	**$ 1,331**	**$ 2,762**	**$ 4,628**	**$ 475**	**$ (617)**	**$ 2,686**	**$ 604**	**$ 531,251**	**$ 56,036**	**$ 587,288**

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

			Baseline Changes										
Pipeline Safety Account	**FY 2022 Actual**	**FY 2023 Enacted**	**Annualization of Prior Pay Raises**	**Annualization of new FY 2023 FTE**	**FY 2024 Pay Raises**	**Adjustment for Compensable Days (261 days)**	**GSA Rent**	**WCF Increase/ Decrease**	**Inflation and Other Adjustments to Base**	**FY 2024 Baseline Estimate**	**Program Increases/ Decreases**	**FY 2024 President's Budget**
PERSONNEL RESOURCES (FTE)	**299**	**356**	-	9	-	-	-	-	-	**365.0**	**2.5**	**367.5**
Direct FTE	299	356	-	9	-	-	-	-	-	365.0	2.5	367.5
FINANCIAL RESOURCES												
OPERATIONS												
Salaries and Benefits	$ 57,563	$ 63,372	$ 729	$ 1,287	$ 2,550	$ 261	$ -	$ -	$ (51)	$ 68,148	$ 1,358	$ 69,506
Travel	3,889	4,299	-	108	-	-	-	-	88	4,495	30	4,525
GSA Rent	4,165	2,909	-	117	-	-	-	-	61	3,087	33	3,120
Communications, & Utilities	268	273	-	-	-	-	-	-	5	278	-	278
Other Services:												
-Other	2,489	2,887	-	342	-	-	-	-	(476)	2,753	95	2,848
-WCF Other	2,862	2,810	-	-	-	-	-	170	-	2,980	-	2,980
-WCF IT	5,458	7,094	-	-	-	-	-	441	-	7,535	-	7,535
-WCF Rent	-	1,300	-	-	-	-	-	568	-	1,868	-	1,868
Supplies	491	303	-	-	-	-	-	-	6	309	-	309
Equipment	361	617	-	81	-	-	-	-	14	712	23	735
Operations Subtotal	**$ 77,546**	**$ 85,864**	**$ 729**	**$ 1,935**	**$ 2,550**	**$ 261**	**$ -**	**$ 1,179**	**$ (353)**	**$ 92,165**	**$ 1,539**	**$ 93,704**
PROGRAMS												
Contract Safety Programs												
Liquefied Natural Gas Siting Fund	$ 400	$ 400	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 400	$ -	$ 400
Compliance/Pipeline Integrity Management/Inspection Support	9,421	9,838	-	-	-	-	-	-	-	9,838	4,003	13,841
Training, Information & Community Assistance	8,050	8,050	-	-	-	-	-	-	-	8,050	2,000	10,050
National Pipeline and Other Mapping Systems	4,300	4,300	-	-	-	-	-	-	-	4,300	-	4,300
Implementing the Oil Pollution Act	1,375	1,375	-	-	-	-	-	-	-	1,375	-	1,375
Contract Safety Programs Subtotal	**$ 23,546**	**$ 23,963**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 23,963**	**$ 6,003**	**$ 29,966**
Research & Development												
General Research	$ 11,000	$ 10,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,500	$ 2,500	$ 13,000
Competitive Academic Agreement Program	2,000	2,000	-	-	-	-	-	-	-	2,000	-	2,000
Research & Development Subtotal	**$ 13,000**	**$ 12,500**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 12,500**	**$ 2,500**	**$ 15,000**
Grants												
State Pipeline Safety Grants	$ 60,000	$ 60,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 60,500	$ 21,500	$ 82,000
Underground Natural Gas Storage Grants	6,000	5,000	-	-	-	-	-	-	-	5,000	-	5,000
State One-call Grants	1,058	1,058	-	-	-	-	-	-	-	1,058	-	1,058
State Damage Prevention Grants	1,500	1,500	-	-	-	-	-	-	-	1,500	-	1,500
Grants Subtotal	**$ 68,558**	**$ 68,058**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 68,058**	**$ 21,500**	**$ 89,558**
Programs Subtotal	**$ 105,104**	**$ 104,521**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 104,521**	**$ 30,003**	**$ 134,524**
TOTAL	**$ 182,650**	**$ 190,385**	**$ 729**	**$ 1,935**	**$ 2,550**	**$ 261**	**$ -**	**$ 1,179**	**$ (353)**	**$ 196,686**	**$ 31,542**	**$ 228,228**

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

			Baseline Changes								
Natural Gas Distribution Infrastructure Safety and Modernization Grants (IIJA Supplemental)	**FY 2022 Actual**	**FY 2023 Enacted**	**Annualization of Prior Pay Raises**	**Annualization of new FY 2023 FTE**	**FY 2024 Pay Raises**	**Adjustment for Compensable Days (261 days)**	**GSA Rent**	**WCF Increase/ Decrease**	**Inflation and Other Adjustments to Base**	**FY 2024 Baseline Estimate**	**Program Increases/ Decreases**	**FY 2024 President's Budget**
PERSONNEL RESOURCES (FTE)	**2**	**8**	-	**1**	-	-	-	-	-	**9.0**	-	**9.0**
Direct FTE	2	8	-	1	-	-	-	-	-	9.0	-	9.0
FINANCIAL RESOURCES												
Operations												
Salaries and Benefits	$ 501	$ 1,184	$ 12	$ 150	$ 52	$ 5	$ -	$ -	$ (1)	$ 1,402	$ -	$ 1,402
Travel	42	96	-	20	-	-	-	-	2	118	-	118
GSA Rent	46	24	-	13	-	-	(37)	-	-	-	-	-
Other Services:												-
-Other	-	110	-	44					(9)	145	-	145
-WCF	52	69	-	-	-	-	-	6	-	75	-	75
-WCF IT	113	175	-	-	-	-	-	15	4	194	-	194
-WCF Rent		32	-	-	-	-	-	15	-	47	-	47
Supplies	-	-	-	-	-	-	-	-	-	-	-	-
Equipment	32	72	-	9	-	-	-	-	1	82	-	82
Operations Subtotal	**$ 786**	**$ 1,762**	**$ 12**	**$ 236**	**$ 52**	**$ 5**	**$ (37)**	**$ 36**	**$ (3)**	**$ 2,063**	**$ -**	**$ 2,063**
PROGRAMS												
Contract Safety Programs												
Pipeline Infrastructure Modernization	$ 3,214	$ 2,238	$ -	$ -	$ -	$ -	$ -	$ -	$ (301)	$ 1,937	$ -	$ 1,937
Contract Safety Programs Subtotal	**$ 3,214**	**$ 2,238**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ (301)**	**$ 1,937**	**$ -**	**$ 1,937**
Grants												
Natural Gas Distribution Infrastructure Safety and Modernization	$ 196,000	$ 196,000	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 196,000	$ -	$ 196,000
Grants Subtotal	**$ 196,000**	**$ 196,000**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 196,000**	**$ -**	**$ 196,000**
Programs Subtotal	**$ 199,214**	**$ 198,238**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ (301)**	**$ 197,937**	**$ -**	**$ 197,937**
TOTAL	**$ 200,000**	**$ 200,000**	**$ 12**	**$ 236**	**$ 52**	**$ 5**	**$ (37)**	**$ 36**	**$ (304)**	**$ 200,000**	**$ -**	**$ 200,000**

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

			Baseline Changes									
Hazardous Materials Safety Account	**FY 2022 Actual**	**FY 2023 Enacted**	**Annualization of Prior Pay Raises**	**Annualization of new FY 2023 FTE**	**FY 2024 Pay Raises**	**Adjustment for Compensable Days (261 days)**	**GSA Rent**	**WCF Increase/ Decrease**	**Inflation and Other Adjustments to Base**	**FY 2024 Baseline Estimate**	**Program Increases/ Decreases**	**FY 2024 President's Budget**
PERSONNEL RESOURCES (FTE)	**180**	**211**	-	**3**	-	-	-	-	-	**213.0**	**14.0**	**227.0**
Direct FTE	180	211	-	3	-	-	-	-	-	213.0	14.0	227.0
FINANCIAL RESOURCES												
Operations												
Salaries and Benefits	33,876	$ 37,143	$ 427	$ 375	$ 1,465	$ 152	$ -	$ -	$ (30)	$ 39,532	$ 2,100	$ 41,632
Travel	1,449	1,518	-	50	-	-	-	-	31	1,599	280	1,879
GSA Rent	2,451	1,572	-	33	-	-	-	-	32	1,637	182	1,819
Communications, & Utilities	173	176	-	-	-	-	-	-	4	180	-	180
Other Services:												
-Other	2,632	2,921	-	110	-	-	-		42	3,073	616	3,689
-WCF	1,544	1,640	-	-	-	-	-	199	-	1,839	-	1,839
-WCF IT	3,343	4,140	-	-	-	-	-	511	-	4,651	-	4,651
-WCF Rent	-	759	-	-	-	-	-	394	-	1,153	-	1,153
Supplies	108	110	-	-	-	-	-		2	112	-	112
Equipment	86	133	-	23	-	-	-		3	159	126	285
Operations Subtotal	**45,661**	**$ 50,112**	**$ 427**	**$ 591**	**$ 1,465**	**$ 152**	**$ -**	**$ 1,104**	**$ 84**	**$ 53,935**	**$ 3,304**	**$ 57,239**
PROGRAMS												
Contract Safety Programs												
Hazmat Information and Analysis	$ 2,017	$ 2,017	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,017	$ 1,000	$ 3,017
Investigation and Enforcement	3,307	3,307	-	-	-	-	-	-	-	3,307	-	3,307
Outreach, Training and Compliance	3,140	2,603	-	-	-	-	-	-	-	2,603	1,184	3,787
Hazmat Registration Program	634	634	-	-	-	-	-	-	-	634	-	634
Contract Safety Programs Subtotal	**9,098**	**8,561**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 8,561**	**$ 2,184**	**$ 10,745**
Research & Development	$ 7,570	$ 7,570	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 7,570	$ -	$ 7,570
Research & Development Subtotal	**7,570**	**7,570**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 7,570**	**$ -**	**$ 7,570**
Grants												
State Hazardous Materials Safety Training	2,500	$ 2,500	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 2,500	$ (1,500)	$ 1,000
ALERT Grants	1,000	1,000	-	-	-	-	-	-	-	1,000	(1,000)	-
Community Safety Grants	1,000	1,000	-	-	-	-	-	-	-	1,000	3,000	4,000
Grants Subtotal	**4,500**	**$ 4,500**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 4,500**	**$ 500**	**$ 5,000**
Programs Subtotal	**21,168**	**20,631**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 20,631**	**$ 2,684**	**$ 23,315**
TOTAL	**66,829**	**70,743**	**$ 427**	**$ 591**	**$ 1,465**	**$ 152**	**$ -**	**$ 1,104**	**$ 84**	**$ 74,566**	**$ 5,988**	**$ 80,554**

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

			Baseline Changes									
Operational Expenses Account	**FY 2022 Actual**	**FY 2023 Enacted**	**Annualization of Prior Pay Raises**	**Annualization of new FY 2023 FTE**	**FY 2024 Pay Raises**	**Adjustment for Compensable Days (261 days)**	**GSA Rent**	**WCF Increase/ Decrease**	**Inflation and Other Adjustments to Base**	**FY 2024 Baseline Estimate**	**Program Increases/ Decreases**	**FY 2024 President's Budget**
PERSONNEL RESOURCES (FTE)	**64**	**70**	-	-	-	-	-	-	-	**70.0**	**-**	**70.0**
Direct FTE	64	70	-	-	-	-	-	-	-	70.0	-	70.0
FINANCIAL RESOURCES												
Operations												
Salaries and Benefits	$ 13,648	$ 14,214	$ 163	$ -	$ 561	$ 57	$ -	$ -	$ (11)	$ 14,984	-	$ 14,984
Travel	59	60	-	-	-	-	-	-	1	61	-	61
GSA Rent	894	580	-	-	-	-	(580)	-	-	-	-	-
Communications & Utilities	140	143	-	-	-	-	-	-	3	146	-	146
Other Services:											-	
-Other	3,539	3,582	-	-	-	-	-	-	590	4,172	-	4,172
-WCF	505	535	-	-	-	-	-	66	-	601	-	601
-WCF IT	1,093	1,350	-	-	-	-	-	171	-	1,521	-	1,521
-WCF Rent	-	247	-	-	-	-	-	130	-	377	-	377
Supplies	110	112	-	-	-	-	-	-	2	114	-	114
Equipment	40	41	-	-	-	-	-	-	-	41	-	41
Operations Subtotal	**$ 20,028**	**$ 20,864**	**$ 163**	**$ -**	**$ 561**	**$ 57**	**$ (580)**	**$ 367**	**$ 585**	**$ 22,017**	**$ -**	**$ 22,017**
PROGRAMS												
Contract Safety Programs												
Information Technology amd Modernization	$ 4,572	$ 4,572	$ -	$ -	$ -	$ -	$ -	$ -	$ 592	$ 5,164	$ -	$ 5,164
Contract Safety Programs Subtotal	**$ 4,572**	**$ 4,572**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 592**	**$ 5,164**	**$ -**	**$ 5,164**
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**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**592**	**$ 9,664**	**$ -**	**$ 9,664**
TOTAL	**$ 29,100**	**$ 29,936**	**$ 163**	**$ -**	**$ 561**	**57**	**(580)**	**$ 367**	**$ 1,177**	**$ 31,681**	**$ -**	**$ 31,681**

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

			Baseline Changes									
Emergency Preparedness Account	**FY 2022 Actual**	**FY 2023 Enacted**	**Annualization of Prior Pay Raises**	**Annualization of new FY 2023 FTE**	**FY 2024 Pay Raises**	**Adjustment for Compensable Days (261 days)**	**GSA Rent**	**WCF Increase/ Decrease**	**Inflation and Other Adjustments to Base**	**FY 2024 Baseline Estimate**	**Program Increases/ Decreases**	**FY 2024 President's Budget**
PERSONNEL RESOURCES (FTE)	-	-	-	-	-	-	-	-	-	-	-	-
Direct FTE	-	-	-	-	-	-	-	-	-	-	-	-
FINANCIAL RESOURCES												
Operations												
Technical Assistance	$ 141	$ 141	-	-	-	-	-	-	-	$ 141	$ -	$ 141
Emergency Response Guidebook	586	586	-	-	-	-	-	-	-	586	-	586
Other	603	603	-	-	-	-	-	-	-	603	-	603
Operations Subtotal	**$ 1,330**	**$ 1,330**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 1,330**	**$ -**	**$ 1,330**
PROGRAMS												
Hazardous Materials Emergency Preparedness Grants	$ 21,988	$ 21,988	-	-	-	-	-	-	-	$ 21,988	$ 16,507	$ 38,495
Hazardoud 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)	-	-								-	-	-
Programs Subtotal	**$ 26,988**	**$ 26,988**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 26,988**	**$ 18,507**	**$ 45,495**
TOTAL	**$ 28,318**	**$ 28,318**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ 28,318**	**$ 18,507**	**$ 46,825**

EXHIBIT II-6
WORKING CAPITAL FUND
Pipeline and Hazardous Materials Safety Administration
($000)

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
DIRECT:			
Pipeline Safety All	**$ 7,918**	**$ 11,204**	**$ 12,383**
Pipeline Safety IT and IT Commodity Shared Services	5,416	7,094	7,535
Pipeline Safety Rent 1/	-	1,300	1,868
Pipeline Safety Other	2,501	2,810	2,980
Hazardous Materials Safety All	**$ 4,887**	**$ 6,538**	**$ 7,643**
Hazardous Materials Safety IT and IT Commodity Shared Services	3,343	4,140	4,651
Hazardous Materials Safety Rent 1/	-	759	1,153
Hazardous Materials Safety Other	1,544	1,640	1,839
Operational Expenses All	**$ 1,598**	**$ 2,132**	**$ 2,499**
Operational Expenses IT and IT Commodity Shared Services	1,093	1,350	1,521
Operational Expenses Rent 1/	-	247	377
Operational Expenses Other	505	535	601
SUBTOTAL	**$ 14,403**	**$ 19,874**	**$ 22,525**
TOTAL, Base programs	**$ 14,403**	**$ 19,874**	**$ 22,525**
SUPPLEMENTAL FUNDING			
IIJA Supplemental (Division J) Subtotal	$ 164	$ 276	$ 257
Natural Gas Disribution Infrastructure Safety & Modernization All	164	276	257
Natural Gas Disribution Infrastructure Safety & Modernization IT and IT Commodity Shared Services	113	175	190
Natural Gas Disribution Infrastructure Safety & Modernization Rent 1/	-	32	47
Natural Gas Disribution Infrastructure Safety & Modernization Other	52	69	75
Total, All Sources	**$ 14,567**	**$ 20,150**	**$ 22,782**

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

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
DIRECT FUNDED BY APPROPRIATION			
Pipeline Safety	299.0	356.0	367.5
Hazardous Materials Safety	180.0	210.5	227.0
Operational Expenses	64.0	70.0	70.0
SUBTOTAL, DIRECT FUNDED	543.0	636.5	664.5
BASE TOTAL FTEs	**543.0**	**636.5**	**664.5**
SUPPLEMENTAL FUNDED FTE's			
IIJA Supplemental Funding Natural Gas Disribution Infrastructure Safety & Modernization	2.0	8.0	9.0
SUBTOTAL, Supplemental Funded	2.0	8.0	9.0
TOTAL FTEs	**545.0**	**644.5**	**673.5**

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

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
DIRECT FUNDED BY APPROPRIATION			
Pipeline Safety	302	365	370
Hazardous Materials Safety	181	213	241
Operational Expenses	68	70	70
SUBTOTAL, DIRECT FUNDED	551	648	681
BASE TOTAL POSITIONS	**551**	**648**	**681**
SUPPLEMENTAL FUNDED FTP's			
IIJA Supplemental Funding Natural Gas Disribution Infrastructure Safety & Modernization	7	9	9
SUBTOTAL, Supplemental Funded	7	9	9
TOTAL POSITIONS	**558**	**657**	**690**

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

YEAR	REQUEST	ENACTED
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	$155,000,000	$155,000,000
2023	$158,800,000	$161,385,000
2024	$198,228,000	

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

YEAR	REQUEST	ENACTED
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	$27,650,000
2023	$29,000,000	$29,000,000
2024	$30,000,000	

EXHIBIT II-9
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION
HISTORY OF APPROPRIATIONS
Natural Gas Distribution Infrastructure Safety and Modernization Grants (IIJA Supplemental)

YEAR	REQUEST	ENACTED
2022		$200,000,000
2023		$200,000,000
2024		$200,000,000

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

YEAR	REQUEST	ENACTED
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	$66,829,000
2023	$74,211,000	$70,743,000
2024	$80,554,000	

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

YEAR	REQUEST	ENACTED
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	$29,100,000
2023	$30,150,000	$29,936,000
2024	$31,681,000	

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

YEAR	REQUEST	ENACTED
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	$28,318,000
2023	$46,825,000	$28,318,000
2024	$46,825,000	

EXHIBIT III-1a

All PHMSA ACCOUNTS
SUMMARY ANALYSIS OF CHANGE FROM FY 2023 TO FY 2024
Appropriations, Obligations, Limitations, and Exempt Obligations
($000)

	$000	FTE
FY 2023 ENACTED	$ 519,382	644.5
ADJUSTMENTS TO BASE:		
Annualization of Prior Pay Raises	1,331	
Annualization of new FY 2023 FTE	2,762	12.5
FY 2024 Pay Raises	4,628	
GSA Rent	(617)	
WCF Increase/ Decrease	2,686	
Adjustment for Compensable Days (261 days)	475	
Inflation and Other Adjustments to Base	604	
SUBTOTAL, ADJUSTMENTS TO BASE	**11,869**	**12.5**
PROGRAM REDUCTIONS		
Hazardous Materials Safety		
State Hazardous Materials Safety Training	(1,500)	
ALERT Grants	(1,000)	
Hazardous Materials Safety Subtotal	**(2,500)**	**-**
SUBTOTAL, PROGRAM REDUCTIONS	**(2,500)**	**-**
PROGRAM INCREASES		
Pipeline Safety		
State Pipeline Safety Grants	21,500	
General Research	2,500	
Implementing PIPES Act Mandates	4,003	
Recruitment and Retention of Inspection and Enforcement staff	1,000	
Training, Information & Community Assistance	2,000	
Additional Engineering and Research Staff 5 Positions (2.5 FTE)	539	2.5
Pipeline Safety Subtotal	**31,542**	**2.5**
Emergency Preparedness Grants		
Hazardous Materials Emergency Preparedness Grants	16,507	
Hazardoud Materials Instructor Training (HMIT) Grants	1,000	
Supplemental Public Sector Training Grants	1,000	
Emergency Preparedness Grants Subtotal	**18,507**	-
Hazardous Materials Safety		
Community Safety Grants	3,000	
Space Initiative	1,826	3.5
Outreach, Training and Compliance	1,184	
Outreach Staff 10 Positions (5 FTE)	1,180	5.0
Accident Investigation 8 Positions (4 FTE)	944	4.0
Emerging Energy Experts 3 Positions (1.5 FTE)	354	1.5
Hazardous Materials Safety Subtotal	**8,488**	**14.0**
SUBTOTAL, PROGRAM INCREASES	**58,537**	**16.5**
FY 2024 REQUEST	**587,288**	**673.5**

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 section 60107 of title 49, United States Code, and to discharge the pipeline program responsibilities of the Oil Pollution Act of 1990 (Public Law 101–380), [$190,385,000] $*228,228,000*, to remain available until September 30, [2025] *2026*, of which [$29,000,000] *$30,000,000* shall be derived from the Oil Spill Liability Trust Fund; of which [$153,985,000] *$190,828,000* shall be derived from the Pipeline Safety Fund; of which $400,000 shall be derived from the fees collected under section 60303 of title 49, United States Code, and deposited in the Liquefied Natural Gas Siting Account for compliance reviews of liquefied natural gas facilities; and of which $7,000,000 shall be derived from fees collected under section 60302 of title 49, United States Code, and deposited in the Underground Natural Gas Storage Facility Safety Account for the purpose of carrying out section 60141 of title 49, United States Code: [*Provided*, That not less than $1,058,000 of the amounts made available under this heading shall be for the One-Call State grant program: *Provided further*, That any amounts made available under this heading in this Act or in prior Acts for research contracts, grants, cooperative agreements, or research other transactions agreements (‘‘OTAs’’) shall require written notification to the House and Senate Committees on Appropriations not less than 3 full business days before such research contracts, grants, cooperative agreements, or research OTAs are announced by the Department of Transportation: *Provided further*, That the Secretary shall transmit to the House and Senate Committees on Appropriations the report on pipeline safety testing enhancement as required pursuant to section 105 of the Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2020 (division R of Public Law 116–260): *Provided further*, That the Secretary may obligate amounts made available under this heading to engineer, erect, alter, and repair buildings or make any other public improvements for research facilities at the Transportation Technology Center after the Secretary submits an updated research plan and the report in the preceding proviso to the House and Senate Committees on Appropriations and after such plan and report in the preceding proviso are approved by the House and Senate Committees on Appropriations.]

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

Key Pipeline Safety Request Highlights (Increases and new initiatives):

- **$21.50 million for State Pipeline Safety Grants (Increase):** to increase the reimbursement rate to states to 80 percent of their pipeline safety program cost. For the last several years, the funding level combined with increasing state costs has resulted in the reimbursement rate to states decreasing to about 55 percent. Under the State Pipeline Safety Grant program, states are delegated PHMSA's responsibility to inspect intrastate pipeline facilities and in return receive up to 80 percent reimbursement of their cost. The $21.50 million is needed to increase reimbursement to incentivize these important inspections and improve pipeline safety nationwide.

- **$4.00 million for implementing mandates of the expected reauthorization (Increase):** The PIPES Act of 2020 created nearly 40 safety mandates for PHMSA. Some of these mandates will continue into the Fiscal Year (FY) 2024 reauthorization and will require funding to complete studies and improve information systems.

- **$1.00 million for recruitment and retention incentives for hard to fill inspection and enforcement staff (Increase):** including special pay rates, student loan repayment, tuition reimbursement, and signing/retention incentives. This continues incentives required by the PIPES Act of 2020—and helps address ever-increasing competition from the private sector to attract and retain pipeline safety inspectors.

- **$2.50 million for Research & Development (Increase):** to restore Pipeline Safety Research and Development to pre-FY 2021 levels. This will allow PHMSA to focus on innovation and transformational pipeline safety research, including areas of cleaner fuel alternatives such as hydrogen, carbon dioxide, and bio-based fuels.

- **$2.00 million for Pipeline Safety Management Systems (Increase):** in support of Section 205 of the PIPES Act of 2020, which mandated that the Secretary submit a report on Pipeline Safety Management Systems (SMS). This report will include guidance and recommendations to promote SMS adoption by pipeline operators in accordance with existing standards, resulting in improved pipeline safety throughout the nation. In FY 2024, PHMSA will expand national outreach efforts to advance Pipeline SMS, emphasizing Administration priorities— safety, economic strength and global competitiveness, equity, climate and sustainability, transformation, and organizational excellence.

- **$589,500 for Engineering and Research Staff (Increase):** in the amount of five additional positions (2.5 FTE) to support increased responsibilities for liquified natural gas (LNG) project review and oversight, to ensure efficient program and performance management, as well as expansion of research safety oversight activities. The PIPES Act of 2020 shifted certain LNG siting review responsibilities to PHMSA. This includes environmental assessments and request for engineering design, special permits, and alternate technology, as well as construction and operational compliance inspections and inspection coordination with

the Federal Energy Regulatory Commission (FERC). Additional engineering and research staff will ensure effective administration of the current program, and better facilitate outreach initiatives, including minority serving institutions, and assist PHMSA to initiate or continue activities in transportation of hydrogen, natural gas blends, biofuels, and CO_2.

PHMSA's Oversight of an Expansive Network of U.S. 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 a significant increase in incidents. The United States operates the most expansive network of energy pipelines in the world. According to the U.S. Energy Information Administration (EIA), this network safely transports 68 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 interstate and intrastate pipeline facilities including approximately 3.4 million miles of pipelines, 8,676 breakout tanks, 168 liquefied natural gas plants, and nearly 400 underground natural gas storage facilities. PHMSA oversees the safe operation of 265,000 miles of hazardous liquid pipelines, 301,000 miles of gas transmission pipelines, 2.3 million miles of gas distribution mains and services, and 488,000 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 and hydrogen and bio-blends, will be critical. For example, PHMSA's $1 billion grant program under the Infrastructure Investment and Jobs Act of 2021 to repair, rehabilitate, or replace legacy leak-prone pipes, often in disadvantaged areas, will enhance pipeline safety and reduce methane emissions from these pipelines.

PHMSA's pipeline 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 nearly 400 underground natural gas storage facilities in 31 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 U.S. energy supply portfolio and involves the storage of natural gas in depleted natural gas or oil reservoirs, salt caverns, or aquifers. These different types of underground natural gas storage facilities (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

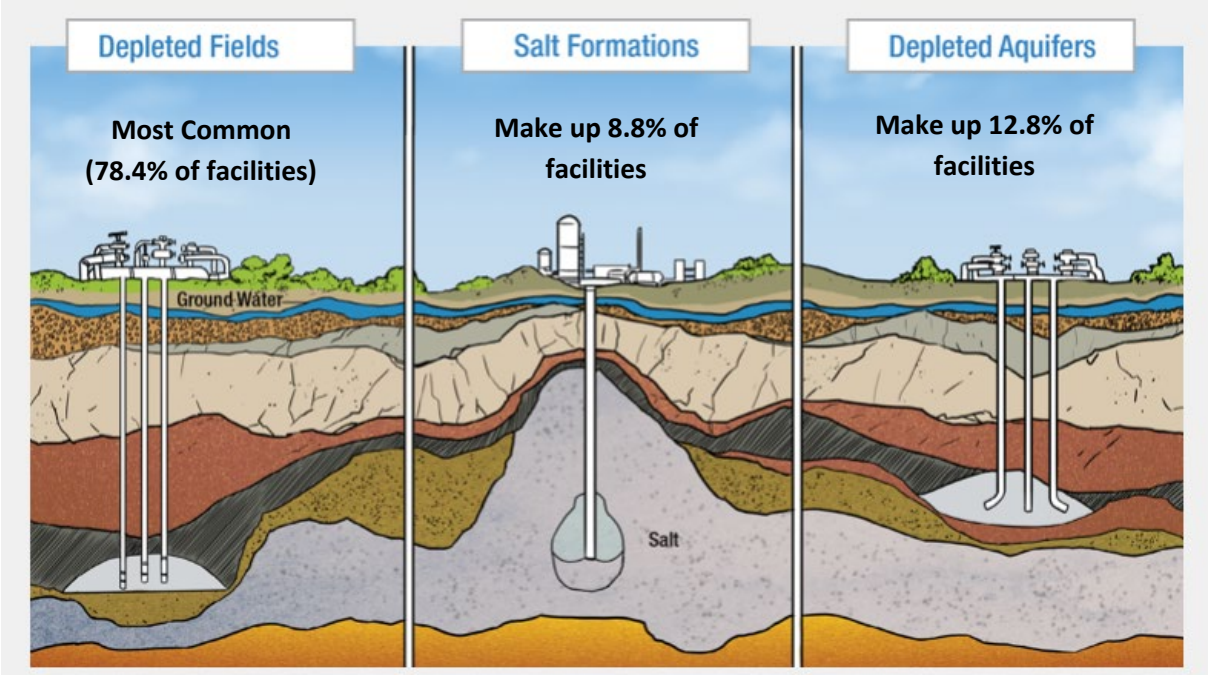

Figure 1: Natural Gas Storage Types (Source: www.energyinfrastructure.org)

An estimated 78.4 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.

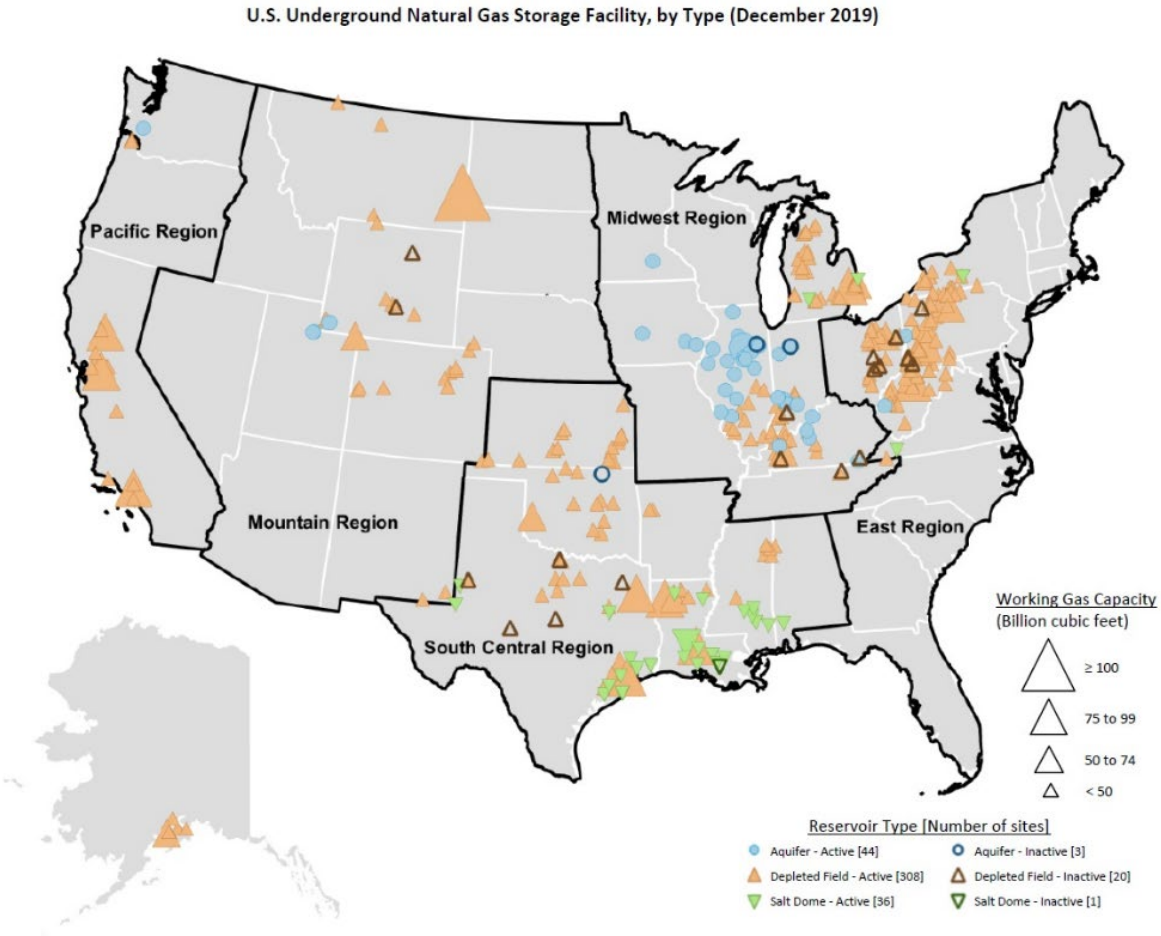

EXHIBIT III-1
PIPELINE SAFETY
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
Operations	$ 101,092	$ 109,827	$ 123,670
Research and Development	$ 13,000	$ 12,500	$ 15,000
Grants	$ 68,558	$ 68,058	$ 89,558
TOTAL, Base appropriations	$ 182,650	$ 190,385	$ 228,228
FTEs			
Direct Funded	299.0	356.0	367.5
Reimbursable, allocated, other			

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 3.4 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 2023 TO FY 2024
Appropriations, Obligations, Limitations, and Exempt Obligations
($000)

	$000	FTE
FY 2023 ENACTED	$ 190,385	356.0
ADJUSTMENTS TO BASE:		
Annualization of FY 2023 FTE	1,935	9.0
Annualization of Prior Pay Raise(s)	729	-
FY 2024 Pay Raise	2,550	-
GSA Rent	-	-
Adjustment for Compensable Days (261 days)	261	-
Working Capital Fund	1,179	-
Inflation and Other Adjustments to Base	(353)	-
SUBTOTAL, ADJUSTMENTS TO BASE	**$ 6,301**	**9.0**
PROGRAM INCREASES		
State Pipeline Safety Grants	21,500	
General Research	2,500	
Implementing PIPES Act Mandates	4,003	
Training, Information & Community Assistance	2,000	
Recruitment and Retention of Inspection and Enforcement staff	1,000	
Additional Engineering and Research Staff (2.5 FTE)	539	2.5
SUBTOTAL, PROGRAM INCREASES	**$ 31,542**	**2.5**
FY 2024 REQUEST	**$ 228,228**	**367.5**
Supplemental Appropriations	**-**	**-**
TOTAL	**$ 228,228**	**367.5**

Detailed Justification for the Pipeline Safety Program

FY 2024 – Pipeline Safety Program Budget Request
($000)

Program Activity	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
Operations	$ 77,546	$ 85,864	$ 93,704
Contract Safety Programs	23,546	23,963	29,966
Research and Development	13,000	12,500	15,000
Grants	68,558	68,058	89,558
Total	**$ 182,650**	**$ 190,385**	**$ 228,228**
FTEs	**299.0**	**356.0**	**367.5**

Grants: $89.56 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, $82.00 million ($21.50 million increase): The State Pipeline Safety Grant program supports state inspections of pipeline facilities within a state, and nine states which act as agents for PHMSA inspecting pipelines crossing state boundaries. States inspect and enforce pipeline safety regulations for over 85 percent of the infrastructure under PHMSA's safety authority. There are currently 436 state inspectors, and PHMSA encourages states to increase the number of inspectors based on the increase in regulations and pipeline miles required to be inspected. With FY 2022 and FY 2023 enacted funding levels, PHMSA expects reimbursement of state costs to be approximately 55 percent. If a state chooses to not continue in the State Pipeline Safety Grant program, it becomes PHMSA's responsibility to inspect the pipeline facilities in the state and PHMSA does not have the available resources to take on this task.

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. States depend on PHMSA's funding to support hiring, training, and retaining the state workforce. PHMSA expects the new Gas Gathering Line Rule, which expanded the number of miles of pipelines under

PHMSA's jurisdiction by over 400,000 miles, will increase the amount of state pipeline infrastructure and increase the number of operators that must be inspected by states. The requested $21.5 million funding increase for the State Pipeline Safety Grant program will allow PHMSA to reimburse states 80 percent of their costs, enabling states to hire more qualified state inspectors, prepare for the additional inspection burden of the new gathering line rule, and offset inflation.

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 387 gas and 49 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 2005, 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 36.5 percent over the last 10 years. This reduction in incidents and increase in safety oversight also supports reducing greenhouse gas emissions.

Underground Natural Gas Storage Grants, $5.00 million: Underground Natural Gas Storage (UNGS) grants help ensure safety, reduce environmental impacts, and drive economic growth by overseeing the safe and efficient storage and subsequent transportation of natural gas. PHMSA reimburses inspection costs to the 14 out of 15 states participating in the UNGS safety program. States may qualify for reimbursement if they are participating in PHMSA's UNGS grants 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 71 percent over the last five years, also supporting a reduction in greenhouse gas emissions because of state and federal oversight. However, a single incident can have significant environmental consequences.

State Damage Prevention Grants, $1.50 million: 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 of 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.

See Pipeline Locator Below

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:

- Overall quality and effectiveness of One-Call notification systems in the state.
- Communications systems linking One-Call notification systems.
- Location capabilities, including training personnel and developing and using location technology.
- Record retention and recording capabilities for One-Call notification systems.
- Public information and education.
- Participation in One-Call notification systems.
- Compliance and enforcement under the state One-Call notification program.

In FY 2022, PHMSA awarded a total of $1.19 million in State One-Call Grants for 36 projects in 27 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 36.5 percent over the last 10 years.

Operations: $93.70 million

PHMSA Office of Pipeline Safety's (OPS') FY 2024 budget request funds 370 positions (367.5 FTE) and covers costs of salaries, benefits, travel, training, supplies, and equipment (including personal protective equipment for all inspectors). Of the 370 positions, 247 are inspection and enforcement staff working across the country through a network of regional offices. The remaining OPS staff include 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 20 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: requiring leak detection on gas and hazardous liquid pipelines; imposing safety requirements for idled natural gas and hazardous liquid pipelines; updating minimum safety standards for permanent, small scale LNG pipeline facilities; ensuring gas distribution inspection and maintenance plans contribute to public safety, the reduction of leaks and natural gas releases, and protection of the environment; 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 is in the process of completing its hiring of 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, N.J.; Atlanta, Ga.; Kansas City, Mo.; Houston, Texas; Lakewood, Colo.; Des Plaines, Ill.; Ontario, Calif.; and Anchorage, Alaska. PHMSA also operates a national training center and accident investigation office located in Oklahoma City, Okla. OPS staff conducts inspections, investigations, outreach, and enforcement activities. It 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 2024 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 has in the past offered candidates higher salaries and provided attractive employment incentives, placing PHMSA at a disadvantage in recruiting and retaining 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. To fully fund competitive special pay rates into FY 2024, and the other recruitment and retention incentives mentioned, PHMSA requests an additional $1.0 million.

Climate Change Mitigation Staff: In support of EO 14008 (Tackling Climate Change at Home and Abroad), in FY 2024 these positions will improve PHMSA's research and analysis, leading to better rulemaking and policies to mitigate adverse impacts of climate change. These positions will support ongoing work related to the following:

- The DOT Climate Action Plan Progress Report
- The DOT Transportation Decarbonization Blueprint
- The DOT Low Carbon Procurement Pilot
- The DOT Climate Change Center Methane Emissions Reduction Challenge
- Environmental justice and equity initiatives and policies (Justice40 and PHMSA's 2012 EJ Policy, respectively)
- The White House Permitting Action Plan
- Other environmental rulemakings and reviews

Engineering and Research Staff, (an additional $589 thousand): PHMSA requests five additional positions (2.5 FTE) to support increased requirements in LNG and research and development (R&D). According to the EIA long term forecast, LNG exports are expected to reach approximately 10 trillion cubic feet (27.34 billion cubic feet per day (Bcf/d)) by 2033, surpassing natural gas exports via pipelines to Mexico and Canada.[1] Currently, eight LNG export facilities operate in the United States with nine additional facilities and three expansion projects expected to be under construction in 2024. The total liquefaction capacity for the eight existing facilities will be approximately 14.55 Bcf/d of LNG. LNG staff are also involved with regulatory initiatives including rulemaking, frequently asked questions, technical interpretations, code interpretations, and the development of technical standards. Significant staff and contractor resources will be required as PHMSA updates 49 CFR Part 193 in an anticipated LNG rulemaking and the implementation of the new rule.

These major strategic programs all currently reside in OPS' Engineering and Research Division and the current staff of 18 members have a workload consisting of over 200 projects to date. Additional staff will help expedite project completion, alleviate the backlog of projects, and assist in responding to stakeholder inquiries in a timely manner to ensure the prompt and safe construction of these key LNG facilities.

Liquefied Natural Gas Facilities: PHMSA evaluates proposed LNG plants' siting, design, and construction records as part of its compliance inspections during the construction phase, and operational and maintenance plans and records as part of its safety inspections during facility operation. Currently, 27 operational LNG facilities require compliance inspections by PHMSA; PHMSA inspects operational facilities an average of once every three years. PHMSA is also conducting ongoing inspections of 12 LNG facilities[2] under construction to ensure compliance with regulatory standards and expect nine additional facilities to be under construction by the end of calendar year 2023.

[1] According to the EIA's Annual Energy Outlook 2022, the 28 Bcf/d export capacity is based on the high oil and gas supply case projection that assumes higher resource availability and lower prices of natural gas.
[2]Currently, PHMSA conducts construction inspections of nine interstate LNG facilities and assists its State Partners with three peak-shaving LNG facility construction inspection.

On December 5, 2022, PHMSA completed the report regarding a National Center of Excellence for Liquefied Natural Gas Safety (NCELNG), as requested in Section 111 of the PIPES Act of 2020.[3] The report described the resources necessary to operate the NCELNG and proposed how such a facility could operate to carry out its functions. Section 111 identified the functions of the NCELNG as:

- Furthering the expertise of the federal government in the operations, management, and regulatory practices of LNG facilities.
- Acting as a repository of information on best practices for the operation of LNG facilities.
- Facilitating collaboration among LNG sector stakeholders.

As described in Section 111, 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.

In the FY 2023 Consolidated Appropriations Act, Congress appropriated up to $8.4 million to PHMSA for the creation of the NCELNG. The funding provides $2.4 million for the establishment of the Center with up $6 million available for LNG focused research. PHMSA is in the early stages of establishing the Center, and this work will continue into FY 2024 and future fiscal years.

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 update LNG facility regulations, in FY 2024 and beyond.

Contract Safety Programs: $29.97 million

Contracts for pipeline safety programs support PHMSA's inspection and compliance activities, helping to 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. OPS' contracted safety programs include:

[3] https://www.phmsa.dot.gov/news/report-congress-national-center-excellence-lng-safety.

Compliance/Pipeline Integrity Management/Inspection Support, $13.84 million: PHMSA issues 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 of which 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. To fully fund the anticipated mandates in the FY 2024 reauthorization, PHMSA requests $4.0 million for contract support including studies and technical experts.

Training, Information, and Community Assistance Services, $10.05 million: To improve outreach and engagement on pipeline safety matters, PHMSA funds workshops, training, information-sharing meetings, and community assistance services for internal and external stakeholders. PHMSA engages with and facilitates communication among myriad pipeline stakeholders, including the public, landowners, operators, government, and elected officials. PHMSA also participates with the Common Ground Alliance and the Pipeline Safety Trust on pipeline damage prevention efforts and maintains representatives in each PHMSA region who inform communities about pipeline safety risks, answer questions, and educate the public and landowners on how to work and live safely around pipelines, provide technical assistance, and address pipeline safety complaints. For the calendar year 2022, PHMSA participated in 218 outreach and engagement activities, and expects to continue this level of engagement going forward.

Within the above amount, PHMSA requests a program increase of $2 million for improving Pipeline Safety Management Systems to support Section 205 of the PIPES Act of 2020, which mandated that the Secretary and the relevant State authority promote and assess pipeline SMS frameworks based on guidance and recommendations obtained from a report mandated by Section 205. In FY 2024, PHMSA will expand national outreach efforts to advance pipeline SMS, emphasizing Administration priorities – safety, economic strength and global competitiveness, equity, climate and sustainability, transformation, and organizational excellence.

PHMSA will continue engaging with stakeholders on effective pipeline safety management systems frameworks and promote a “safety first” culture. PHMSA will also expand how input is received from all stakeholders, including public interest advocacy groups like the Pipeline Safety Trust, labor unions, and environmental groups. Data analysis comparing pipeline incident rates with socially vulnerable areas appears to indicate a disproportionally higher incident rate in disadvantaged and underserved communities. PHMSA will use data to focus inspection efforts to increase safety in the most socially vulnerable areas and consider how rulemakings and agency decisions affect underrepresented communities and increase community outreach efforts to increase awareness and education in socially vulnerable areas. For example, aging and higher risk infrastructure is found in older parts of cities and towns, which often coincide with disadvantaged and underserved communities. PHMSA is developing an interactive system that will allow the public and states to view social vulnerability data relative to pipeline locations and population areas. PHMSA expects this to be a multi-year project. This system will enable

PHMSA to make data-driven decisions that promote equity in transportation.

Mapping and Information Systems, $4.30 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 have adequate resources to minimize the environmental impact of oil spills to sensitive environments. 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 380 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 active response plans, PHMSA has approved 460, issued letters of corrections for 25, and have 75 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 evaluates operator PREP exercises and, at times, conducts PREP Government-Initiated Unannounced Exercises (GIUEs) to ensure requirements for oil pollution response plans are being met and assess compliance with federal regulations. PHMSA engages in PREP exercises to evaluate preparedness and response plans, procedures, and capabilities; identify best practices and opportunities for improvement; and implement improvement plans. PHMSA expects to engage in a minimum of 13 PREP exercises in FY 2024, providing support to other federal, state, local, or tribal partners, or evaluating operator compliance with federal regulations and their 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 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 168 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 will collect 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 2024, PHMSA will expand upon the FY 2023 initial efforts to address the Administration's strategic priorities of safety, economic recovery and rebuilding, climate change, and transportation as an engine for equity. Additionally, included in the FY 2023 appropriations, PHMSA was directed to establish the NCELNG, including research initiatives to address LNG safety.

On November 15-16, 2022, the Office of Pipeline Safety hosted an LNG public meeting and forum, which served as an opportunity for stakeholders to discuss research gaps and challenges in the LNG industry. Also, this forum served as a venue for PHMSA, public interest groups, industry, academia, intergovernmental partners, and the public to collaborate on PHMSA's future R&D agenda. The LNG forum included four working groups and helped identify over 23 research gaps on facility design and construction, facility siting, facility fire protection, and facility operation and maintenance. Over 193 attendees from multiple countries attended the forum, and more than 20 presentations were given during the two days.

PHMSA plans to hold a forum in FY 2024 to inform and drive the research agenda in FY 2025 and beyond. The R&D investments in FY 2023 and FY 2024 will include a continued focus on pipeline safety, methane mitigation, underground natural gas storage facilities, and LNG facilities due to changes in the regulatory landscape and energy supply/demand.

In September of 2022, PHMSA awarded 15 new projects to develop seven new technology projects and eight projects to promote new knowledge for decision-makers. The R&D announcement focused on the following seven research areas:

- Rehabilitation of Aging Cast Iron Pipelines
- Underground Natural Gas/Hydrogen Storage
- Utilization of Inspection Tools on Hydrogen Pipelines
- Hydrogen Pipeline Network Components
- Methane/Carbon Dioxide (CO_2) Mitigation: Construction Through Operations
- Breakout Tanks: Preventing Corrosion of Tank Bottoms

- Liquefied Natural Gas (LNG)

Also in September of 2022, PHMSA awarded six new projects through Competitive Academic Agreement Program (CAAP) addressing knowledge development for decision-makers focused on the following four research topics:

- Excessive Cathodic Protection (CP) on Vintage Pipelines
- Development of Structural Liner Material
- Pipeline Infrastructure Modernization – Hydrogen Network
- Determination of Potential Impact Radius (PIR) for Carbon Dioxide (CO_2) Pipelines

In June of 2022, PHMSA awarded two new projects through participation in DOT's SBIR program to conduct proof of concept research in the following areas:

- Vibration Sensing System to Monitor for Potential Excavation Damage
- UNGS Advanced Leak Identification and Well Control Solutions

Establishing Inter-Agency Agreement (IAAs) with other federal agencies occurs when PHMSA aligns the safety research needs with the expertise and capabilities of federal labs. In August of 2022, PHMSA and the National Institute of Standards and Technology entered an IAA to review current codes and standards for gaps in qualification requirements for welds in pipelines intended for hydrogen transportation. In FY 2023, PHMSA intends to enter into IAAs with the Department of Energy (DOE) to further address the technical challenges associated with underground gas storage of hydrogen and also CO_2.

PHMSA is developing the Core Research Announcement Number 9 and the Notice of Funding Opportunity for FY 2023. Some of the potential research gaps under consideration are the repair, rehabilitation, and replacement of leak prone, legacy cast iron pipelines; integrity of underground fuel storage, including hydrogen; LNG facility design and construction; LNG facility siting; LNG facility fire protection and LNG facility operation and maintenance.

PHMSA's research results in scholarly publications and commercially viable products to improve pipeline safety. To date, PHMSA's R&D investments resulted in one patent application, 17 published papers, and two commercialized technologies.

PHMSA, as directed by the PIPES Act of 2020, prepared a report 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.

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 percent within the last ten years.

Research and development projects are either co-funded with the private sector and academia or 100 percent funded with other federal agencies. 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 R&D proposals, the OPS gives preference to projects likely to bring a product to market within five years. Since 2002, the R&D program has brought 35 innovative safety 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.
3. Pipeline facility designs that, without compromising pipeline safety, mitigate the need to intentionally vent natural gas.

PHMSA will use the results of this report to determine follow-on actions.

In response to the Administration's 2030 and 2050 Net Zero goals, industry is considering expanded development and transportation of gaseous hydrogen and supercritical CO_2. Both are integral to an increased reliance on green hydrogen from renewable fuels and other hydrogen sources, where carbon dioxide may be captured and stored or utilized so that it decreases the climate change 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)
- Liquefaction

Under CAAP, PHMSA fosters partnerships with colleges and universities through awards to conduct innovative research. PHMSA will continue to make CAAP 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. Additionally, PHMSA will seek to change the cost sharing for Minority Serving Institutions, such that up to 100 percent of the costs of research and development with Minority Serving Institutions may be carried out using federal funds.

Underground Natural Gas Storage and Liquefied Natural Gas Facility Safety: UNGS and LNG facility safety are also areas of increasing R&D importance because of the rapid growth in LNG use and PHMSA's regulatory responsibilities in UNGS. The Aliso Canyon storage gas leak, for example, gained national attention and prompted new R&D 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.

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

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 3.4 million miles of pipelines. This will protect the environment, help reduce greenhouse gas emissions, promote equity through outreach efforts to underserved communities, 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, and reduce the potential for community impact due to pipeline mishaps and incidents.

Oil Spill Liability Trust Fund

APPROPRIATIONS EXPLANATION

TRUST FUND SHARE OF PIPELINE SAFETY

(OIL SPILL LIABILITY TRUST FUND)

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Background: 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. The OSLTF has five sources of revenue – per barrel tax, collected from the oil industry on petroleum produced or imported to the United States; transfers from other existing pollution funds; interest; cost recoveries from those responsible for oil incidents; fines and penalties from responsible parties related to oil incidents. 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.

What is this program and why is it necessary?

The Oil Spill Liability Trust Fund (OSLTF) was created by 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 PHMSA's responsibilities in overseeing operators of hazardous liquid pipelines – 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 OSLTF contribution amount is based on a reasonable share of the cost of these activities for pipelines in and around inland waterways.

The OSLTF is a source of funding for the Pipeline Safety program. The OSLTF 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 2024, the OSLTF will contribute $30 million to the overall Pipeline Safety Program. The amount funds any cost PHMSA incurs to set safety standards and check safe operation of hazardous liquids pipeline operators as well as funding grants to state partners' inspection programs, and research. The FY 2024 Budget request proposes to increase the OSLTF share by $1 million, reducing the pipeline operators' user fees by the same amount. This will better align trust fund contributions with the increase in operators' costs.

EXHIBIT III-1
OIL SPILL LIABILITY TRUST FUND
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 REQUEST
Operations	$ 12,650	$ 13,000	$ 17,000
Research and Development	$ 3,000	$ 3,000	$ 2,000
Grants	$ 12,000	$ 13,000	$ 11,000
TOTAL, Base appropriations	$ 27,650	$ 29,000	$ 30,000
FTEs Direct Funded	0	0	0

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.

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Natural Gas Distribution Infrastructure Safety and Modernization Grants

APPROPRIATIONS LANGUAGE

NATURAL GAS DISTRIBUTION INFRASTRUTURE 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 (115th 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
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
IIJA Supplemental (Division J)			
Operations	$ 4,000	$ 4,000	$ 4,000
Grants	$ 196,000	$ 196,000	$ 196,000
TOTAL, Base appropriations	$ 200,000	$ 200,000	$ 200,000
FTEs			
Direct Funded	2.0	8.0	9.0

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 2023 TO FY 2024
Appropriations, Obligations, Limitations, and Exempt Obligations
($000)

	$000	FTE
FY 2023 ENACTED	$ 200,000	8.0
ADJUSTMENTS TO BASE:		
Annualization of Prior Pay Raises	12	-
Annualization of new FY 2023 FTE	236	1.0
FY 2024 Pay Raises	52	-
Adjustment for Compensable Days (261 days)	5	-
GSA Rent	(37)	-
WCF Increase/ Decrease	36	-
Inflation and Other Adjustments to Base	(304)	-
SUBTOTAL, ADJUSTMENTS TO BASE	**$ -**	**1.0**
PROGRAM REDUCTIONS		-
SUBTOTAL, PROGRAM REDUCTIONS	**$ -**	**-**
PROGRAM INCREASES		
SUBTOTAL, PROGRAM INCREASES	**-**	**-**
FY 2024 REQUEST	**$ 200,000**	**9.0**

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

FY 2024 – Program Budget Request
($000)

Program Activity	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
Operations	$ 786	$ 1,726	$ 2,063
Contract Safety Programs	3,214	2,238	1,937
Grants	196,000	196,000	196,000
Total	**$ 200,000**	**$ 200,000**	**$ 200,000**
FTEs	**2.0**	**8.0**	**9.0**

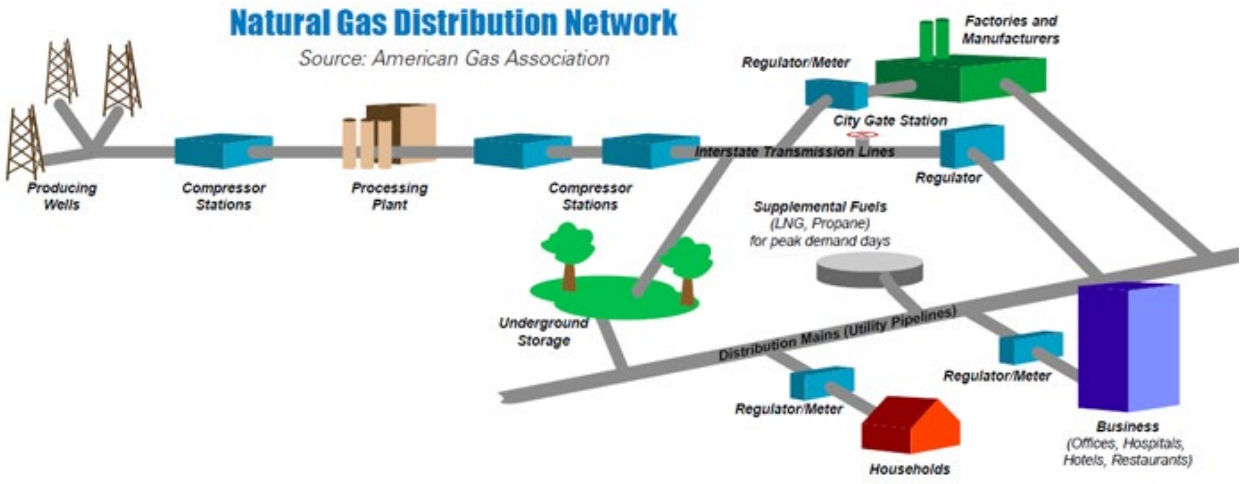
What Is This Program and What Does the Funding Level Support?

Key Request Highlights:

PHMSA's Oversight of an Expansive Network of U.S. Pipelines

The United States operates the most expansive network of energy pipelines in the world. PHMSA administers a national regulatory safety program for approximately 3.4 million miles of interstate and intrastate pipelines in the United States. Cast and wrought iron pipelines are among the oldest energy pipelines constructed in the country. Many of these pipelines were installed more than 60 years ago and still deliver natural gas to homes and businesses today. However, the degrading nature of iron alloys, the age of the pipelines, and pipe joints design have greatly increased the risk involved with continued use of such pipelines, as well as similarly risky legacy pipes such as those made of bare steel or legacy plastic. A significant portion of municipally and community-owned operators have aging infrastructure consisting of legacy cast iron, bare steel, and legacy plastic pipelines. These pipelines are associated with higher incidents of fatalities and injuries as well as leaks that contribute to global climate change. Many municipal and community-owned pipelines travel through urban and rural cities, towns, and neighborhoods, especially those that have been considered underserved. Going forward, modernization of old, leak-prone, less reliable pipeline networks will improve safety, reduce methane emission, and pave the way for transporting cleaner fuels, such as hydrogen and biofuels to provide significant public benefits.

PHMSA's $1 billion program under the IIJA to repair, rehabilitate, or replace legacy leak-prone pipes will enhance pipeline safety and reduce methane emissions from these pipelines, especially in economically disadvantaged areas.



Program Evaluation: The program will have longstanding impacts on safety, with the modernization of aged lines; equity, with the addition of better service to often underserved communities; and climate change solutions, with upgraded lines that better contain methane emissions. PHMSA is committed to using program evaluation to best manage the resources entrusted. In FY 2023, PHMSA is refining performance metrics, developing systems to capture data, and will be collecting results to track progress and validate measures. In FY 2024, PHMSA will conduct a program evaluation, looking at the initial program awards made in FY 2023. The projects will likely be in process and the evaluation will generally consider to what extent the program is meeting its key performance metrics and goals.

PHMSA will consider the following in its FY 2024 Evaluation:

1. How many miles of pipeline have been replaced, repaired, and rehabilitated?
2. By how much was methane reduced based on replaced, repaired, and rehabilitated pipeline?
3. How much was spent on equipment? Breakdown of types of equipment?
4. How much funding was allocated to replace, repair, and rehabilitate pipelines that serve disadvantaged communities?
5. How many jobs were created or retained as a result of this grant program?

Grants: $196.00 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. In FY 2024, PHMSA intends to issue its third round of annual Notice of Funding Opportunity (NOFO), while continuing to monitor grantee performance on the previously awarded grants. By FY 2024, PHMSA expects to have nearly $400 million in active projects throughout the country, with another almost $200 million to be awarded.

The Natural Gas Distribution Infrastructure Safety and Modernization Grant Program consists of the following two goals:

1. To repair, rehabilitate or replace 1,000 miles of high-risk, leak-prone, community-owned legacy gas distribution pipeline infrastructure, and
2. To create an estimated reduction of 1,000 metric tons of methane emissions and a reduction in fatalities/serious injuries.

On average, PHMSA expects each round of grant award recipients to repair or replace approximately 200 miles of leak-prone pipeline and reduce approximately 200 metric tons of methane emissions. In FY 2024, PHMSA expects its two rounds of grant award recipients to be in the process of repairing or replacing approximately 400 miles of leak-prone pipeline and reducing approximately 400 metric tons of methane emissions.

Operations: $2.06 million

In FY 2024, PHMSA will address the Administration's strategic priorities of safety, economic recovery, and rebuilding, addressing climate change, and using transportation as an engine for equity. 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 continue to conduct outreach events to assist applicants in designing the best and most impactful applications. During FY 2024, PHMSA will issue a third NOFO and work with the initial grantees to ensure grantee performance and results.

Contract Safety Programs: $1.94 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 national, 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.

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, (2) reduce the presence of pipes 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.

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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, [$70,743,000] *$80,554,000*, [of which $12,070,000 shall] *to* remain available until September 30, [2025] *2026* [of which $1,000,000 shall be made available for carrying out section 5107(i) of title 49, United States Code]: *Provided*, That up to $800,000 in fees collected under section 5108(g) of title 49, United States Code, 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.

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

Many products used in, on, and around homes, 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 Fiscal Year (FY) 2020, 27 of these incidents resulted in seven 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 increase 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. Examples of shipped hazardous materials include flammable liquids such as oil, gasoline, and liquefied natural gas (LNG); explosives such as fireworks, flammable solids, oxidizing substances and organic peroxides; infectious substances such as COVID-19 samples or cultures; lithium-ion batteries; corrosive substances; and radioactive materials.

Following is a summary of key programmatic changes:

- **An increase of $3.0 million for the Community Safety Grant program.** 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. The funding increase will allow the often-underserved communities, to receive needed resources to respond to the unique risk associated with crude by rail and other hazardous materials shipments through their communities.

- **$1.83 million additional funding to stand-up new Space Initiative Program Support.** A request for 7 positions (3.5 FTE) at a cost of $826,000; and $1 million in contract funding to expedite the review and issuance of special permits to support U.S. global competitiveness in the space launch market. Transportation of spacecraft to the launch site involves the transportation of hazardous materials including lithium-ion batteries, hydrazine, and compressed oxygen in unique, non–traditional packaging that are part of the spacecraft or that support launch operations. PHMSA engineers evaluate the packaging for these materials to ensure these unique solutions demonstrate an equivalent level of safety to traditional hazardous materials packages while the payload is moved via highway, rail, barge, or aircraft to the launch site. In the last few years, PHMSA has received an increasing number of expedited requests for review of complex applications. Expedited application reviews are necessary, especially when launch windows are narrow. Adding additional staff will decrease processing times and make the U.S. space industry more competitive and efficient. Contract funding will improve systems supporting the program—and allow for the development and advancement of international standards in this space—advancing U.S. global competitiveness and preventing countries without safety requirements from undercutting the U.S. market.

Picture 1 - Clear labeling with placards and graphics is central to reducing hazardous materials risk.

PHMSA regulates the safe transport of lithium-ion batteries that have become integral to almost everything we do, but that also pose risks 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 continuous 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. The first is to 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 proper information and training. This is especially important as many hazardous materials shipments originate in, terminate in, or are 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 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 funded by PHMSA 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 funded by PHMSA 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, which is especially important given the continued and expanding presence of lithium-ion batteries in many everyday products.

Research for FY 2024 will focus on the following strategic areas:

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

Specific emphasis will be placed on emerging battery safety issues with lithium-ion 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 LNG, and continuing to refine best practices for responding to hazardous materials incidents by updating the *Emergency Response Guidebook*, which PHMSA writes, publishes, and distributes. Much of PHMSA's hazardous materials research is done cooperatively between government and industry entities with a focus on near-term solutions for evolving hazardous materials-related transportation challenges.

EXHIBIT III-1
HAZARDOUS MATERIALS SAFETY
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
Operations	$ 54,759	$ 58,673	$ 67,984
Research and Development	$ 7,570	$ 7,570	$ 7,570
Grants	$ 4,500	$ 4,500	$ 5,000
TOTAL, Base appropriations	$ 66,829	$ 70,743	$ 80,554
FTEs			
Direct Funded	180.0	210.5	227.0

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 2023 TO FY 2024
Appropriations, Obligations, Limitations, and Exempt Obligations
($000)

	$000	FTE
FY 2023 ENACTED	$ 70,743	210.5
ADJUSTMENTS TO BASE:		
Annualization of FY 2023 FTE	591	2.5
Annualization of Prior Pay Raise(s)	427	
FY 2024 Pay Raise	1,465	
GSA Rent	-	
Working Capital Fund	1,104	
Inflation and Other Adjustments to Base	84	
Adjustment for Compensable Days (261 days)	152	
SUBTOTAL, ADJUSTMENTS TO BASE	**3,823**	**2.5**
PROGRAM REDUCTIONS		
State Hazardous Materials Safety Training	(1,500)	
ALERT Grants	(1,000)	
SUBTOTAL, PROGRAM REDUCTIONS	**(2,500)**	**-**
PROGRAM INCREASES		
Community Safety Grants	3,000	
Space Initiative	1,826	3.5
Outreach, Training and Compliance	1,184	
Outreach Staff 10 Positions (5 FTE)	1,180	5.0
Accident Investigation 8 Positions (4 FTE)	944	4.0
Emerging Energy Experts 3 Positions (1.5 FTE)	354	1.5
SUBTOTAL, PROGRAM INCREASES	**8,488**	**14.0**
FY 2024 REQUEST	**80,554**	**227.0**
Supplemental Appropriations	**-**	**-**
TOTAL	**80,554**	**227.0**

FY 2024 – Hazardous Materials Safety Budget Request
($000)

Program Activity	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
Operations	$ 45,661	$ 50,112	$ 57,239
Contract Safety Programs	9,098	8,561	10,745
Research and Development	7,570	7,570	7,570
Grants	4,500	4,500	5,000
Total	**$ 66,829**	**$ 70,743**	**$ 80,554**
FTEs	**180.0**	**210.5**	**227.0**

Operating Expenses: $57.24 million

PHMSA's FY 2024 request includes $57.24 million for hazardous materials safety-related operating expenses to support the cost of 241 positions (227 FTE): 82 inspectors and 159 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.

Space Initiative Program Support. The request includes an additional seven positions (3.5 FTE) to expedite the review and issuance of special permits to support U.S. global competitiveness in the space launch market. Transportation of spacecraft to the launch site involves hazardous materials including lithium-ion batteries, hydrazine, and compressed oxygen in unique, non–traditional packaging that are part of the spacecraft or that support launch operations. PHMSA engineers evaluate the packaging for these materials to ensure these unique solutions demonstrate an equivalent level of safety to traditional hazardous materials packages while the payload is moved via highway, rail, barge, or aircraft to the launch site. In the last few years, PHMSA has received an increasing number of expedited requests for review of complex applications. Expedited application reviews are necessary, especially when launch windows are narrow. Adding additional staff will decrease processing times and help make the U.S. space

industry more competitive and efficient. Contract funding will improve systems supporting the program—and allow for the development and advancement of international standards in this space—advancing U.S. global competitiveness and preventing countries without safety requirements from undercutting the U.S. market.

Contract Safety Programs: $10.75 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.

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 toward high-impact areas, and to evaluating programmatic success through PHMSA's key priority areas. In addition, the request includes an additional $1 million for Space Program Support to expedite the review and issuance of special permits to facilitate space launches.

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 2024, PHMSA will continue to build on its enhanced outreach, training, and compliance program by placing an 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 includes providing community outreach and engagement to help ensure the safe transport of hazardous materials and emergency preparedness and response.

PHMSA's efforts will include developing and distributing outreach material and resources that enhance general understanding of the hazardous material regulations or function-specific guidelines. Additionally, PHMSA attends 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 hazardous materials transportation workshops and webinars provide an overview of the regulatory requirements—what they are, how they apply, and how to comply with them—for shipping and transporting hazardous materials.

Undeclared Hazardous materials Shipments Outreach Initiative. The FY 2024 request continues the Check the Box program to educate the regulated industry and the public on what is considered hazardous materials, and to improve their understanding on how to ship everyday items, safely. 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 the transition to eMarketplaces 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.

Click to view the "Check the Box" Video

The FY 2024 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 2024 will be on engaging non-traditional partners and underserved 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 23,000 hazardous materials shippers and carriers. These fees provide essential funding for grants to first responders.

The programs described above advance PHMSA's mission for 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 (R&D) Program finds solutions to complex problems in the packaging and movement of hazardous materials. R&D 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 defects. 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 U.S. 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 argue for better metrics and/or regulations to help ensure the safe use of these tanks, 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: $5.00 million

Community Safety Grants. PHMSA's request in FY 2024 includes $4.00 million for Community Safety Grants (CSG). 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 program 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 2024 CSG funding priority is directed towards ensuring that underserved communities are prepared and trained to respond to hazardous materials 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 hazardous materials emergency response outreach and training for fire, law enforcement, local officials, and public safety access point personnel.

State Hazardous Materials Safety Inspection program provides states with the resources to conduct safety inspections of hazardous materials shippers. In FY 2022, PHMSA completed the framework and information collection systems to support the program, and these initiatives continued in FY 2023. For FY 2024, PHMSA intends to continue funding inspections in the two states currently enrolled in the program and bring on an additional one to three states. 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.

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

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 global competitiveness, 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, an alternative to traditional enforcement actions, has improved compliance, achieved a higher level of safety than possible with standard processes, and leveraged limited inspector resources.

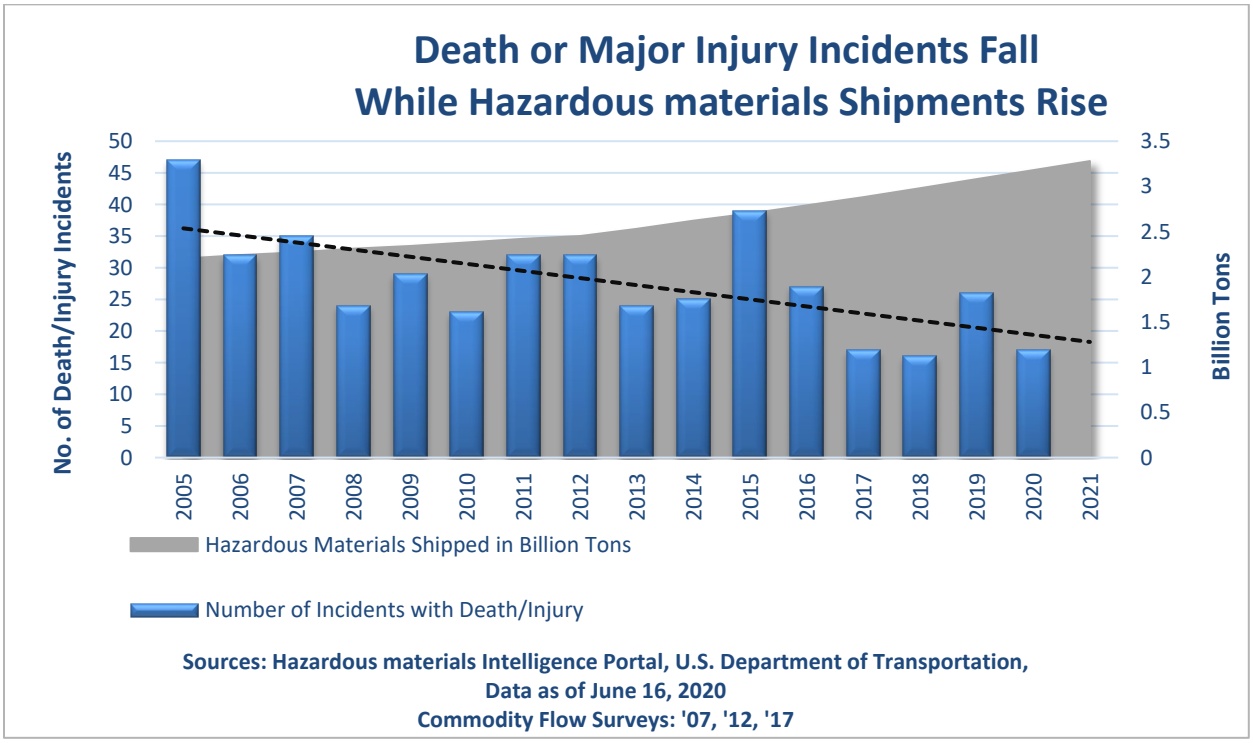
The Office of Hazardous Materials Safety inspectors have also established liaisons with senior company officials at organizations including major hazardous materials distributors and manufacturers of chemicals and packaging to correct widespread systemic problems through innovative, non-punitive methods. 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.

Lastly, PHMSA is the global leader in the establishment of international hazardous materials and dangerous goods standards—this ensures U.S. global competitiveness by reducing barriers for export and import of hazardous materials that are essential to the U.S. economy and our everyday lives.

Performance and Program Management: PHMSA collects accident and incident data nationwide. PHMSA carefully tracks the root causes of incidents and use the information collected to inform the public and to inform our rulemaking and safety standards. 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 $80.55 million in funding to manage the evolving challenges of packaging and shipping hazardous materials, with a commitment in 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.

Emergency Preparedness Grants

APPROPRIATIONS LANGUAGE

[EMERGENCY PREPAREDNESS GRANTS

(LIMITATION ON OBLIGATIONS)

(EMERGENCY PREPAREDNESS FUND)]

FY 2024 continues the proposal made in FY 2023 to remove the appropriations language that provides an obligation limitation.

[For expenses necessary to carry out the Emergency Preparedness Grants program, not more than $28,318,000 shall remain available until September 30, 2025, from amounts made available by section 5116(h) and subsections (b) and (c) of section 5128 of title 49, United States Code: 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 the administrative costs of carrying out sections 5116, 5107(e), and 5108(g)(2) of title 49, United States Code: 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), 5116(j), and 5107(e) of title 49, United States Code.]

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

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 $1.90 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 hazardous materials 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. Moreover, often these are economically distressed, historically underserved communities.

Congress, through the Infrastructure Investment and Jobs Act of 2021 (IIJA), recognized the need to support communities and first responders most affected by this growth. Funding for the program comes from approximately 23,000 hazardous materials shippers' and carriers (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, and 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 2024, PHMSA requests budget authority of $46.83 million for the Emergency Preparedness Grants program. This allows PHMSA to continue important emergency preparedness planning and training grants; technical assistance to grant recipients; and the publication, printing, and distribution of the *Emergency Response Guidebook*. Additionally, PHMSA's FY 2024 priority is directed towards ensuring that underserved communities are prepared and trained to respond to hazardous materials 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 firefighters, law enforcement, community leaders, and response organizations nationwide.

Obligation Limitation: Included in the request is a proposal to remove the obligation limitation to allow the use of all registration fees collected. The obligation limitation sets a maximum amount that can be used each year and limits PHMSA's ability to direct all collected funds toward critical hazard materials response needs. With the obligation limitation in place, if collections exceed the obligation limitation, PHMSA cannot award those funds. Moreover, given PHMSA's recent progress on rulemaking action to raise fee collections to align with authorization levels, this is anticipated to be an issue in FY 2024. PHMSA wants to ensure the award of all available resources to train and prepare first responders for hazardous materials accidents and incidents.

Importantly, the obligation limitation creates a disconnect with the authorization in amount and uses. Unlike other DOT accounts that require an obligation limitation for purposes of outlay

control, the construct with the special fund here does not require an obligation limitation as only amounts collected are available for use. Removing the obligation limitation would streamline the program to operate as authorized and ensure that communities across the Nation are better prepared to respond to dangerous and live-threatening hazardous materials accidents and releases.

EXHIBIT III-1
EMERGENCY PREPAREDNESS GRANTS
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 REQUEST
Operations	$ 1,330	$ 1,330	$ 1,330
Grants	$ 26,988	$ 26,988	$ 45,495
TOTAL, Base appropriations	$ 28,318	$ 28,318	$ 46,825
FTEs			
Direct Funded	0	0	0

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 2023 TO FY 2024
Appropriations, Obligations, Limitations, and Exempt Obligations

	$000	FTE
FY 2023 ENACTED	$ 28,318	-
	-	-
ADJUSTMENTS TO BASE:		
Annualization of FY 2023 FTE	-	-
Annualization of Prior Pay Raise(s)	-	-
FY 2024 Pay Raise	-	-
GSA Rent	-	-
Working Capital Fund	-	-
Non-Pay Inflation	-	-
SUBTOTAL, ADJUSTMENTS TO BASE	**$ -**	**-**
PROGRAM INCREASES		
Hazardous Materials Emergency Preparedness Grants	16,507	-
Hazardous Materials Instructor Training (HMIT) Grants	1,000	-
Supplemental Public Sector Training Grants	1,000	-
SUBTOTAL, PROGRAM INCREASES	**$ 16,507**	**-**
FY 2024 REQUEST	**$ 46,825**	**-**
Supplemental Appropriations	-	-
TOTAL	**$ 46,825**	**-**

FY 2024 – Hazardous Materials Emergency Preparedness Grants Budget Request ($000)

Program Activity	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
Operations	$ 1,330	$ 1,330	$ 1,330
Grants	26,988	26,988	45,495
Total	**$ 28,318**	**$ 28,318**	**$ 46,825**

Operations: $1.33 million

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, $586 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/hazardous materials/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. The *Emergency Response Guidebook* is present in almost every emergency response vehicle in the United States.

Oversight and Technical Assistance, $141.00 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, 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: $45.50 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 following programs:

- **Hazardous Materials Emergency Preparedness (HMEP) Grants**, $38.50 million
- **Hazardous Materials Instructor Training (HMIT) Grants**, $5.00 million
- **Supplemental Public-Sector Training Grants (SPST)**, $2.00 million
- **Assistance for Local Emergency Response Training (ALERT)** (Amount based on unused amounts from other programs)

HMEP Grants, $38.50 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 funding provides 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. Annually, HMEP grants fund training for over 70,000 emergency responders nationwide. Additionally, it enables states and local communities to carryout preparedness activities to include development of emergency response plans, hazardous materials exercises, and commodity flow studies.

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 2,000 hazardous materials employees and instructors nationwide.

SPST Grants, $2.00 million
The SPST grant is used to train instructors to conduct hazardous materials response training programs for individuals with statutory responsibility to respond to hazardous materials 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 hazardous materials 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.

ALERT Grants, funded via recoveries
The ALERT grant is funded out of recoveries from prior unused awards that are no longer available for obligation and are not otherwise appropriated for use. 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 first responders can safely and efficiently respond to hazardous materials 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?

Well-trained first responders, with an ability to identify hazardous materials at the scene of an incident, knowledge on how to secure a site, and extinguish hazardous material fires are important for keeping the public safe.

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.

Performance and Program Management: PHMSA collects statistics on training provided to first responders and community response plans developed because of the Emergency Preparedness Grants programs nationwide. This results in volunteer and career first responders, oftentimes in underserved communities, being properly trained in the response to accidents and incidents involving hazardous materials. Based on final performance reports capturing outputs from FY 2016 – 2018, the program has aided the following response activities nationwide:

- Training of over 214,000 emergency responders.
- Updating of 145 emergency response plans.
- Performance of 145 emergency response exercises.
- Completion of over 70 commodity flow studies.
- Completion of 100+ other hazardous materials planning activities.

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Operational Expenses

APPROPRIATIONS LANGUAGE

OPERATIONAL EXPENSES

For necessary operational expenses of the Pipeline and Hazardous Materials Safety Administration, [$29,936,000] *$31,681,000* of which $4,500,000 shall remain available until September 30, [2025] *2026*.

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 planned reauthorization of the Protecting Our Infrastructure of Pipelines Enhancing Safety Act of 2020 (PIPES) will continue important advances in new safety technology and regulatory reform. In addition, the passage of the Infrastructure Investment and Jobs Act (IIJA) added calls for new safety standards and programming. The operational expenses account provides funding for the offices and people that support this difficult work.

EXHIBIT III-1
OPERATIONAL EXPENSES
Summary by Program Activity
Appropriations, Obligation Limitations, and Exempt Obligations
($000)

	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
Operations	$ 24,600	$ 25,436	$ 27,181
Grants	$ 4,500	$ 4,500	$ 4,500
TOTAL, Base appropriations	$ 29,100	$ 29,936	$ 31,681
FTEs			
Direct Funded	64.0	70.0	70.0
Account	$ 29,100	$ 29,936	$ 31,681

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 2023 TO FY 2024
Appropriations, Obligations, Limitations, and Exempt Obligations
($000)

	$000	FTE
FY 2023 ENACTED	$ 29,936	70.0
ADJUSTMENTS TO BASE:		
Annualization of FY 2023 FTE	-	-
Annualization of Prior Pay Raise(s)	163	-
FY 2024 Pay Raise	561	-
GSA Rent	(580)	-
Working Capital Fund	367	-
Non-Pay Inflation	1,177	-
Adjustment for Compensable Days (261 days)	57	
SUBTOTAL, ADJUSTMENTS TO BASE	**$ 1,745**	-
PROGRAM REDUCTIONS		
Administrative & Professional Support	-	
SUBTOTAL, PROGRAM REDUCTIONS	**$ -**	**-**
PROGRAM INCREASES	-	-
SUBTOTAL, PROGRAM INCREASES	**$ -**	**-**
FY 2024 REQUEST	**$ 31,681**	**70.0**
Supplemental Appropriations	**-**	**-**
TOTAL	**$ 31,681**	**70.0**

Detailed Justification for the Operational Expenses Program

FY 2024 Operational Expenses Budget Request
($000)

Program Activity	FY 2022 ACTUAL	FY 2023 ENACTED	FY 2024 PRES. BUD.
Operations	$ 20,028	$ 20,864	$ 22,017
Contract Safety Programs	4,572	4,572	5,164
Grants	4,500	4,500	4,500
Total	**$ 29,100**	**$ 29,936**	**$ 31,681**
FTEs	**64.0**	**70.0**	**70.0**

Operations: $22.02 million

PHMSA's FY 2024 operations request of $22.02 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. These funds specifically cover salaries and benefits, equipment, rent, travel, training, supplies and other essential commitments needed for the organization to implement the Administration's critical goals and priorities.

In FY 2024, PHMSA will continue the following key 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 advanced, intermediate and basic leadership development programs and intends to expand upon these programs in FY 2024 to develop and retain the best and 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 positions 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.
- Reviewing PHMSA Mission Critical Occupations and developing targeted recruitment and hiring strategies for each.
- Continuing outreach partnerships with state disability agencies to highlight PHMSA career opportunities to disabled veterans and people with disabilities that those agencies provide services to.
- Expanding digital marketing activities to highlight PHMSA's career opportunities on the job centers of several diverse affinity groups and professional associations.
- Extending our outreach to Universities, Colleges, and Affinity Groups utilizing social media (LinkedIn, Twitter, Handshake, Glassdoor, and others), and ensuring Minority Serving Institutions were represented in all University outreach activities.
- Participating in special hiring events; and updated recruitment materials for PHMSA employee "ambassadors" to use at these events to attract diverse talent to the agency.
- Continuing tracking processes to identify and quantify the number of outreach events PHMSA participates in that target minority serving institutions, affinity groups, or other external stakeholders that represent underrepresented populations in PHMSA's workforce.
- 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.

Expanded and enhanced Civil Rights function. PHMSA requests continued investment in FY 2024 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 continues to work on recommendations for improving civility, diversity and inclusion across the agency. Improvement focuses on 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 the Office of Civil Rights in its mission. Improving these areas will help PHMSA operate as a Model EEO Program.

In addition, PHMSA manages an expanded external Title VI program and the 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 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 revising our External Civil Rights Program Guidelines for Grant Recipients to comply with the 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. The Office of Civil Rights is working with the grants managers to conduct Title VI reviews of all applicants for PHMSA grants. 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: $5.16 million

PHMSA's request for contract safety programs include $5.16 million in Information Technology (IT) investments. These investments include modernizing safety management and operations, improved cybersecurity in all mission systems, and transitioning from costly, traditional server-based solutions to a cloud network infrastructure to help PHMSA adapt to the changing work environment to support all staff regardless of where in the nation they perform their duties. This is especially critical as the agency moves to a more geographically dispersed workforce.

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. PHMSA is focused on providing increased automation and functionality to its field inspection staff enabling them to more seamlessly and effectively perform their essential safety oversight functions.

The funding also supports all IT used at headquarters and some of the regional support. This includes support for key Departmental priorities such as multi-factor authentication and encryption of all data. These investments will not only ensure the security of PHMSA's systems and information, but also promote better systems operation.

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 awards 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."
- 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?

The request will allow PHMSA to carry out an effective staffing plan, support innovative modern information technology, expand upon its existing equity and civil rights programs, 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.

Administrative Provisions

Administrative Provisions

Sec. 180: Section 5108(g)(2)(A) of title 49, United States Code, is amended by striking "$3,000" and inserting "$15,000".

This provision is related to the statutory ceiling on hazardous materials safety shipper registration fees. PHMSA collects an annual registration fee from businesses that transport hazardous materials. The fee is collected from registrants as follows: $250 from businesses designated as such by the US Small Business Administration and $2750 from those that are not designated as such (large businesses).

In the FY 2023 Bipartisan Infrastructure Law, PHMSA was directed to consider a larger collection to fund increased grant awards. The program's authorization of appropriations went from $28,318,000 to $46,825,000. The program funds the Emergency Preparedness Grants program providing needed first responder training, trainers, and training curriculum for responding to Hazardous materials accidents and incidents. To collect more to fund the new program size, PHMSA would need to increase its registration fee rates and would have to place most of the burden on small businesses, because they have more increases available to reach the ceiling for fee amounts. While PHMSA works with the authorizers on a permanent fix, this language would pass the increase more equitably to larger companies. Without this change, PHMSA would have to raise small business assessments by over 600% ($250 now raised to over $1,750). This provision would allow PHMSA to raise fees on large businesses which now can only be increased 8% or $250 before they reach the rate ceiling.

This Administrative provision is not part of appropriations language because PHMSA is proposing to remove the appropriations language in the Emergency Preparedness Grant account that limits obligations on this otherwise mandatory budget authority.

Sec. 181: Notwithstanding section 5116(h)(4) of title 49, United States Code, not more than 4 percent of the amounts made available from the account established under section 5116 of such title shall be available to pay the administrative costs of carrying out sections 5116, 5107(e), and 5108(g)(2) of such title.

This provision is related to the Emergency Preparedness Grant account and the availability of 4% of the grant funding for costs to administer the program. Administration includes contract cost for support and professional services, grants management systems and support, and other shared costs allocated to this program. The authorization provides 2% or $570,000 and PHMSA requests use of 4% or $1,140,000 to support this bundle of grant and safety programs in the Emergency Preparedness grants account.

This Administrative provision is not part of appropriations language because PHMSA is proposing to remove the appropriations language in the Emergency Preparedness Grant account that limits obligations on this otherwise mandatory budget authority

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IV: Research, Development and Technology

Department of Transportation
FY 2024 Budget
Pipeline and Hazardous Materials Safety Administration
Research, Development, & Technology Budget Narrative
(Budget Authority in Thousands)

Budget Account	FY 2022 Enacted	FY 2023 Enacted	FY 2024 Request	Applied	Tech Transfer	Facilities	Experimental Development	Major, RD&T Equip
Pipeline Safety	**13,000**	**12,500**	**15,000**	**15,000**				
Safety								
Alternative Fuels Research	2,000	-	-					
Liquefied Natural Gas (LNG) 1/	2,500	6,000	6,000	6,000				
Underground Natural Gas Safety Research Storage (UNGS)	3,000	1,500	1,500	1,500				
Pipeline Anomaly Detection/Characterization	1,700	1,000	1,000	1,000				
Pipeline Leak Detection	500	1,000	1,500	1,500				
Pipeline Threat Prevention	1,500	1,000	1,500	1,500				
Repair/Rehabilitation	1,800	1,000	1,500	1,500				
Climate Change Solutions/Hydrogen	-	1,000	2,000	2,000				
Hazardous Materials Safety	**7,570**	**7,570**	**7,570**	**7,570**				
Safety								
Risk Management	1,500	1,500	1,500	1,500				
Technical Analysis	1,000	1,000	1,000	1,000				
Package Integrity	2,500	2,500	2,500	2,500				
Innovation								
Emerging Technologies	2,570	2,570	2,570	2,570				
Administrative Expenses	**1,909**	**2,209**	**2,209**	**2,209**				
Pipeline Safety	1,363	1,363	1,363	1,363				
Hazardous Materials Safety	546	846	846	846				
Total	**22,479**	**22,279**	**24,779**	**24,779**				

1/ In the FY 2023 Consolidated Appropriations Act, Congress allocated up to $8.4 million to PHMSA for the creation of the National Center of Excellence for Liquefied Natural Gas Safety (NCELNG). The funding provides $2.4 million for the establishment of the Center with up $6 million available for LNG focused research.

Exhibit IV-2 FY 2024 Budget Request – RD&T Program Funding by DOT Strategic Goal
Department of Transportation - FY 2024 Budget
Pipeline and Hazardous Materials Safety Administration
Research, Development, & Technology Budget

(Budget Authority in Thousands, sample entries provided below)

		DOT STRATEGIC GOALS					
ACCOUNT/PROGRAM	**FY 2024 President's Budget**	**Safety**	**Economic Strength**	**Equity**	**Climate & Sustainability**	**Transformation**	**Organizational Excellence**
Pipeline Safety	**$ 15,000**	**$ 9,000**	**$ -**	**$ 1,000**	**$ 5,000**		
Safety							
Alternative Fuels Research							
Liquefied Natural Gas (LNG)	6,000	6,000					
Underground Natural Gas Safety Research Storage (UGS)	1,500	500			1,000		
Pipeline Anomaly Detection/Characterization	1,000	500			500		
Pipeline Leak Detection	1,500	500			1,000		
Pipeline Threat Prevention	1,500	1,000			500		
Repair/Rehabilitation	1,500	500		1,000			
Climate Change Solutions/Hydrogen	2,000				2,000		
Hazardous Materials Safety	**$ 7,570**	**$ 4,560**	**$ 750**	**$ 500**	**$ 1,760**		
Safety							
Risk Management	1,500	1,000		500			
Technical Analysis	1,000	525			475		
Package Integrity	2,500	1,750	750				
Innovation							
Emerging Technologies	2,570	1,285			1,285		
Administrative Expenses	**$ 2,209**	**$ 2,209**	**$ -**	**$ -**	**$ -**		
Pipeline Safety	1,363	1,363					
Hazardous Materials Safety	846	846					
TOTAL	**$ 24,779**	**15,769**	**$ 750**	**$ 1,500**	**$ 6,760**		

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 RD&T budget aims to address ongoing safety and environmental risks and challenges with transporting new energy products.

America's pipeline infrastructure spans more than 3.4 million miles and is used to transport nearly all the natural gas and about two-thirds of the liquid petroleum energy products consumed domestically. According to the U.S. Energy Information Administration, oil furnishes 36 percent of our energy, natural gas 32 percent, coal 11 percent, nuclear 8 percent, and renewables make up 12 percent.[1] Adaptation of the existing pipeline structure to support alternative energy sources and the ability to serve underserved communities will drive the need for innovation in the coming decade. 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 improved 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) 2024, PHMSA will pursue RD&T goals through projects carried out by its Office of Pipeline Safety and Office of Hazardous Materials Safety. PHMSA will continue to seek stakeholder input, review accident trends and causes, and evaluate the progress on its current projects and completed research. This will identify any additional research gaps and research topics to be funded in FY 2024 and identify any follow-on research based on the research outputs from prior years. Based upon this analysis, PHMSA will continue to support all of the Department of Transportation's (Department or DOT) strategic goals through research investments to develop a comprehensive research portfolio in FY 2024, while remaining focused on safety solutions.

The Office of Pipeline Safety RD&T objectives for FY 2024 will address a comprehensive review of the research portfolio that was awarded in FY 2021-2023, focused on safety,

[1] https://www.eia.gov/energyexplained/us-energy-facts/

alternative fuels, and climate change solutions. PHMSA hosted a liquefied natural gas (LNG) public meeting and forum on November 15-16, 2022, which served as an opportunity for stakeholders to discuss research gaps and challenges in the LNG industry. Furthermore, this forum served as a venue for PHMSA, public interest groups, industry, academia, intergovernmental partners, and the public to collaborate on PHMSA's future RD&T agenda. PHMSA plans to host an RD&T forum in FY 2024 that will build momentum from the FY 2023 RD&T forum and provide an opportunity to determine strategic research needs and priorities for FY 2025 and beyond, through collaboration with stakeholders, including academia, public advocacy groups, other DOT modes, federal agencies, and the pipeline industry.

The Office of Pipeline Safety will also support research that addresses PHMSA's priorities identified in the U.S. DOT Strategic Plan FY 2022-2026 on pipeline safety, infrastructure development for transporting alternative fuels, climate change mitigation, environmental justice, and equity.

Anticipated Outcomes

PHMSA will pursue pipeline safety research activities that advance the safe transportation of clean alternative fuels, as well as provide solutions to mitigate the effects of geohazards (land movement, landslides, heavy rains/floods) on pipelines. These research focus areas may also come increasingly to the forefront as FY 2023 research identifies ways to connect research efforts to emerging safety risks and climate change objectives. PHMSA will publish research solicitations, review research proposals, and select prospective research projects to support the Department's and PHMSA's goals.

The Office of Pipeline Safety will continue strengthening its research partnerships with universities, industry, and safety organizations, and continue implementation of its Minority Serving Institutions (MSIs) outreach and engagement initiatives to address the equity and diversity challenges in the pipeline workforce. Increased collaboration with stakeholders and interagency partners will also continue to ensure that research outcomes result in technology transfer and adoption of innovative concepts and methods which will enhance the safety and performance for pipeline-, LNG-, and UNGS-related facilities.

PHMSA's hazardous materials-related research furthers the goal of transportation safety by reducing the likelihood of personal injury and environmental damage resulting from hazardous materials releases. The 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
- Improved pipeline safety and reliability through patented and commercialized technologies and equipment[2]

New Research Areas/Projects for FY 2024

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, in FY 2024, the Office of Pipeline Safety will remain focused on improving pipeline safety through research that provides engineering solutions, applications, and recommendations. PHMSA's Pipeline Safety Research Program (PSRP) achieves its goals through Core program demonstrations, deployments, and commercialization; research partnerships with universities through the Competitive Academic Agreement Program (CAAP); small business-focused innovation through the Department's Small Business Innovative Research Program; and expertise from federal agencies and national labs through Inter-Agency Agreements (IAAs). The PSRP's main objectives are to:

- Help advance a safe and reliable pipeline transportation system for the American public by providing the scientific and engineering basis for improved industry standards and rulemaking
- Promote emerging technologies for pipeline industry implementation
- Identify and address pipeline safety challenges and research gaps and invest in research projects that address the Department's FYs 2022-2026 strategic goals

PHMSA's 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 RD&T for purely governmental purposes. The Office of Hazardous Materials research programs are entirely federally funded. RDT appropriations have a three-year period of availability.

Pipeline Safety Research Program Focus Areas:

- Climate Change Solutions/Renewable Energy
- LNG Safety
- Underground Natural Gas Storage (UNGS) Facilities Safety
- Pipeline Anomaly Detection/Characterization
- Pipeline Leak Detection
- Pipeline Threat Prevention
- Repair/Rehabilitation

[2] https://primis.phmsa.dot.gov/rd/performance_technology.htm

Hazardous Materials Safety Research Program 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 supports evaluation and performance measurement efforts related to the Foundations for Evidence-Based Policymaking Act of 2018 (Pub. L. 115-435). In support of DOT's strategic objectives, PHMSA's performance goals will be monitored for trends, reported DOT-wide, and serve as a guide for both RD&T and operational performance.

PHMSA avoids unnecessary research duplication through extensive public outreach, working closely with interagency partners from federal agencies, private research consortiums, academia, public advocacy groups, and other pipeline stakeholders. Together, these efforts aim to fund and share the cost of critical research to develop new technologies, products, and knowledge to advance safety and address climate challenges while promoting stakeholder engagement and transparency.

Research investments into pipeline-, LNG-, or UNGS-related challenges may result in published analytical outcomes, small-scale tests, and in some cases, full-scale demonstration projects that lead to new technology and scientific methods that improve pipeline safety. The results from each completed project are provided in final reports shared publicly on the PHMSA website and/or the National Transportation Library. Researchers are required to disseminate their findings through presentations and publications at conferences or in peer-reviewed journals. Completed technology development projects may result in new patents or products for commercialized adoption.

PHMSA maintains close relationships with research partners throughout a project to ensure that it remains on track and is achieving its intended results. 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
- 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.

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 the program.

PHMSA's safety mission is paramount. By conducting research to reduce the frequency of pipeline failures and minimize releases, the PSRP supports the safety mission and addresses climate and sustainability strategic goals.

Potential Progress Made Toward Achieving Strategic Goals

PHMSA will continue to advance the safe transportation of energy and other hazardous materials essential to our daily lives by conducting research that aligns with the Department's strategic goals. Results of the research findings will continue to address both national and local challenges in urban and rural communities. The PSRP remains focused on systemic, performance-based approaches to ensure pipeline transportation safety, protect the environment, and ensure the cost effectiveness of alternative energy transportation.

The risks from pipeline failures and releases are disproportionately among older, legacy pipeline systems (concentrated in urban areas) or in previously unregulated rural areas where gathering lines are prevalent. Improvement of the performance and safety of these systems thus also supports equity goals in reducing risk in these areas.

Research results and outputs provide scientific and engineering support for PHMSA's safety activities and regulatory rulemaking efforts. It also facilitates decision-making and supports regulatory reform and policies to improve pipeline safety and reduce greenhouse gas (GHG) emissions from pipelines. Specifically, PHMSA's research investments provided support with developing rulemaking criteria to address anomaly detection and characterization (corrosion, seam cracking and pipe body cracking, denting, and fatigue) and integrity management on pipe assessment/reassessment inspection intervals.

PHMSA's research investments have supported several pipeline safety regulations since 2019 relative to performance standards on leak detection, pipeline anomaly assessments, threat prevention, and non-destructive examination tools to measure pipe strength. These rules included the Gas Transmission Rule – Maximum Allowable Operating Pressure (MAOP) Reconfirmation, Hazardous Liquid Rule, Gas Gathering Rule (Gathering Rule), and Valve Rupture Detection Rule (Valve Rule).

Gas Transmission Rule – In support of the *Safety* and *Climate and Sustainability* goals, PHMSA's research contributed to the Gas Transmission Rule.[3] The Gas Transmission Rule requires operators of gas transmission pipelines constructed before 1970 to determine the

[3] "Pipeline Safety: Safety of Gas Transmission Pipelines: MAO Reconfirmation, Expansion of Assessment Requirements and Other Related Amendments", 84 FR 52180, October 1, 2019.

material strength of their pipelines by reconfirming the MAOP (the maximum operating pressure a pipeline can safely withstand). (See PHMSA RD&T Report: ‘‘Final Summary Report and Recommendations for the Comprehensive Study to Understand Longitudinal ERW Seam Failures—Phase 1,’’ Task 4.5).[4] The rule was the result of a tragic September 9, 2010, Pacific Gas and Electric (PG&E) incident in San Bruno, CA, which resulted in the deaths of eight people, injured 51, destroyed 38 homes, and damaged another 70 homes.

Hazardous Liquid Rule – The Hazardous Liquid Rule *(“Pipeline Safety: Safety of Hazardous Liquid Pipelines”, 84 FR 52260, October 1, 2019)* requires operators to use available data to identify pipeline safety threats and to have a system for detecting leaks on all non-gathering hazardous liquid pipelines.[5][6][7][8][9] In addition, the rule requires operators to inspect and repair damaged pipelines following an extreme weather event or natural disaster. The results from PHMSA’s pipeline safety research projects were used to develop updated leak detection requirements and provided regulatory criteria to analyze pipeline anomalies in high consequence areas.

Gas Gathering Rule – In recent years, gathering lines with diameters, operating pressures, and associated risk factors similar to larger interstate transmission lines have become more common. Gas gathering lines typically transport natural gas from production facilities to interstate gas transmission pipelines. Historically, gathering lines have been lower-pressure, lower-risk, smaller-diameter lines, typically situated in lesser-populated, rural areas. Under the Gas Gathering Rule, over 400,000 miles of gas gathering pipelines are now subject to PHMSA reporting requirements with a subset, approximately 90,000 miles, that are required to meet certain requirements, including for design, construction, corrosion control, damage prevention, and leak surveys.[10] Gas gathering pipelines can be composed of steel, plastic, or composite materials. PHMSA RD&T findings will be used to help in future rule implementation for non-metallic pipe including the: “Assessment of Nondestructive Examination (NDE) and Condition Monitoring Technologies for Defect Detection in Non-Metallic Pipe,” https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=952, as well as “Feasibility of Using Alternative-Steel and Composite Material in Gas and Hazardous Liquid Pipeline Systems,” https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=951.

[4] https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=390.
[5] PHMSA Research and Development Report: Comprehensive Study to Understand Longitudinal ERW Seam Research & Development study task reports: Battelle Final Reports (“Battelle’s Experience with ERW and Flash Weld Seam Failures: Causes and Implications” - Task 1.4).
[6] Report No. 13-002 (“Models for Predicting Failure Stress Levels for Defects Affecting ERW and Flash-Welded Seams” – Subtask 2.4).
[7] Report No. 13-021 (“Predicting Times to Failure for ERW Seam Defects that Grow by Pressure-Cycle-Induced Fatigue” – Subtask 2.5).
[8] “Final Summary Report and Recommendations for the Comprehensive Study to Understand Longitudinal ERW Seam Failures – Phase 1” – Task 4.5), which can be found online at: https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=390.
[9] PHMSA Report commissioned and developed by: Kiefner & Associates, Inc.: “Leak Detection Study,” Final Report No. 12-173, DTPH56-11-D-000001, December 10, 2012, which can be found online at: https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/technical-resources/pipeline/16691/leak-detection-study.pdf.
[10] *(*“Pipeline Safety: Safety of Gas Gathering Pipelines: Extension of Reporting Requirements, Regulation of Large, High-Pressure Lines, and Other Related Amendments”, 86 FR 63266, November 15, 2021)

Valve Rule – PHMSA seeks to reduce pipeline failures and leaks as much as possible, but occasional pipeline failures still occur. The Valve Rule addresses both *Safety and Climate and Sustainability* goals by seeking to minimize product releases once a pipeline failure occurs.[11] The Valve Rule amends pipeline safety regulations to expand the use of automatic and remotely controlled shut-off valves and to enhance rupture identification and response actions by operators for all new natural gas, hazardous liquid, and carbon dioxide pipelines and some gas gathering pipelines that are 6-inches or greater in diameter. The Valve Rule requires operators to identify a pipeline rupture and close the rupture-mitigation valves to prevent or mitigate the public safety and environmental consequences of pipeline ruptures. The results from PHMSA's pipeline safety RD&T investments were used in the development of updated rupture detection requirements. PHMSA expects this rule will significantly reduce the impact of natural gas, carbon dioxide, and hazardous liquid pipeline incidents. In addressing the Department's *Climate and Sustainability* strategic goal, PHMSA estimates the faster response times can reduce emissions up to 40 percent or more for pipelines up to 30-inches in diameter, when compared to historical incidents where rupture isolation may have taken more than 90 minutes.

In sum, PHMSA expects the enhancements included in these rules to improve public safety, reduce threats to the environment, and promote environmental justice for underserved and disadvantaged communities. PHMSA's rulemaking initiatives support the strategic goals of *Climate and Sustainability* and *Equity*. Continued pipeline safety research is necessary to support the safe operation of new and aging pipelines across the U.S. PHMSA plans to continue research investments focused on corrosion, material failure, and equipment failure, which caused 61 percent of all PHMSA jurisdictional pipeline incidents within the last ten years. These efforts and others to consider operational releases will also focus on containment of GHGs (such as methane, the primary component of natural gas) and pipeline transportation of alternative fuels, including hydrogen and carbon dioxide, and improved leak detection and quantification.

[11] "Pipeline Safety: Amendments to Parts 192 and 195 to Require Valve Installation and Minimum Rupture Detection Standards", 87 FR 20940, April 8, 2022.

FY 2024 Program Description

Pipeline Safety Research

FY 2024 Funding Request: $15,000,000

Program Description/Activities

Research initiatives lead to the development of new or improved tools, technologies, and knowledge 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 ensures the safe transportation of energy products, including new alternative energy sources, to reduce greenhouse gas emissions. These investments in hydrogen, carbon dioxide, and biofuels will ensure safe and effective regulation of the transport of new energy products—particularly as volumes scale up. Research funding is derived from pipeline operators through user fee assessments and from an Oil Spill Liability Trust Fund contribution.

PSRP is collaborative by design. A comprehensive research strategy is developed systematically through research and development forums, research gap ideas submitted by the public, PHMSA's initiatives, and collaborative partnerships with government and non-government organizations. The Office of Pipeline Safety holds its Pipeline RD&T Forums biennially, and uses the recommendations from the forum, as well as internal pipeline safety data to establish future fiscal year research funding agendas and solicitations.

The 2022 LNG forum included four working groups and helped identify over 23 LNG research gaps on facility design and construction, facility siting, facility fire protection, and facility operation and maintenance. Over 193 attendees from multiple countries attended the forum, and more than 20 presentations were given over two days.

PHMSA plans to hold a forum in FY 2024 to inform and drive the research agenda in FY 2025, and beyond. The RD&T investments in FY 2023 and FY 2024 will include a continued focus on pipeline safety, methane mitigation, underground natural gas storage facilities, and LNG facilities due to changes in the regulatory landscape and energy supply/demand.

In FY 2024, the Office of Pipeline Safety's PSRP will continue to pursue its RD&T goals through four sub-programs: the CAAP, the Pipeline Core Research Program (Core), Small Business Innovative Research (SBIR), and IAAs. The PSRP is executed through competitive awards, cost-sharing agreements, grants, and IAAs. The sub-programs address different research requirements and are designed to develop concepts from their initial stages to industry or government adoption.

Collaboration Partners

The PSRP RD&T collaboration efforts include both federal and non-federal partners. Historically, the Office of Pipeline Safety has reached IAAs with the Departments of Energy,

Interior, and Commerce to conduct materials research. In FY 2021 and FY 2022, PHMSA participated in the following interagency hydrogen and carbon dioxide pipeline initiatives:

- U.S. Department of Energy (DOE)
  - Hydrogen and Fuel Cell Technologies Office
    - DOE's National Hydrogen Strategy and Roadmap
    - Clean Hydrogen Joint Undertaking Expert Workshop on Environmental Impacts of Hydrogen
  - Fossil Energy & Carbon Management
    - Division of Methane Mitigation Technologies
    - Division of Carbon Transport and Storage
- U.S. Dept of Commerce/U.S.-India Strategic Partnership Forum
- National Association of Pipeline Safety Representatives
  - Distribution Team, Hydrogen/Biofuels Working Group

Collaboration efforts with DOE's Advanced Research Projects Agency–Energy (ARPA-E) have provided opportunities for PHMSA staff to participate in the pre-award merit review of submitted proposals. PHMSA has assisted ARPA-E in the pre-award activities on two Funding Opportunity Announcements focusing on mitigating methane releases through improved detection, and on cast iron rehabilitation and repair through advanced internal liners. PHMSA staff have also participated in the post award activities once the research is executed and demonstrated. These initiatives deliver better outputs to drive research success, facilitate data sharing, and prevent duplication.

PHMSA will continue building research partnerships with universities, industry, and safety organizations that specialize in bringing safety technology to the market. One important programmatic component is that PHMSA funds cooperative research through the CAAP with colleges and universities, which spurs innovation by enabling academic research. The CAAP is focused on theoretical and high-risk projects that have high promise of success to a wide range of pipeline safety challenges. Promising CAAP theoretical research results may be handed-off to the Core program for further development. The program also exposes students to both the pipeline industry and common pipeline safety challenges to show them how highly valued and needed their engineering and technical disciplines are in the pipeline field.

PHMSA will ensure CAAP becomes more inclusive by expanding outreach communication of funding opportunities and by ensuring all higher education institutions, including Minority Serving Institutions (MSIs), such as Historically Black Colleges and Universities (HBCUs), Hispanic-Serving Institutions (HSIs), and Asian-American, Native American, and Pacific Island-Serving Institutions (AANAPISIs) are notified of opportunities.

PHMSA strongly encourages universities to partner with MSIs in their grant proposals. PHMSA will continue to plan, assess, and execute strategies to increase research partnerships and collaboration with MSIs; increase awareness, capacity, and interest in pipeline safety research and careers; and introduce science, technology, engineering, and math (STEM) curriculum and learning through CAAP research partnerships. In March 2022, PHMSA conducted two

informational sessions with HBCUs and HSIs on the CAAP in order to encourage proposals for the FY 2022 CAAP Notice of Funding Opportunity (NOFO). Additionally, PHMSA is looking to increase the federal funds for MSIs to up to 100 percent, potentially eliminating cost-sharing for the MSIs.

External Partners

PHMSA's research program partners with a wide range of external entities 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"* on the beta.SAM.gov webpage. 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 Department. 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 which can be found here: https://primis.phmsa.dot.gov/rd/gapsuggestions.htm.

Partnerships with government organizations (GOs) and non-government organizations (NGOs) provide clear opportunities to leverage ongoing successes, cost-share on mutual safety challenges, and remove duplication. Throughout the year, PHMSA briefs the pipeline industry and public interest groups 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 Program Activities

For 2024, PHMSA plans to continue investing in new research in the following pipeline safety focus areas:

1. Climate Change Solutions/Hydrogen ($2 million) - The 2022 Environmental Protection Agency (EPA) Inventory of U.S. Greenhouse Gas Emissions and Sinks (GHGI) data reports that natural gas systems accounted for 23 percent of total U.S. methane emissions in 2020. Transmission and storage (e.g., LNG and UNGS) facilities accounted for 24.6 percent of methane emissions from natural gas systems, gathering and boosting accounted for 22.7 percent while distribution accounted for 8.4 percent. (https://www.epa.gov/ghgemissions/inventory-us -greenhouse-gas-emissions-and-sinks; Table 3-69). Significant research investments at the federal and international level have been conducted on alternative renewable fuels in hydrogen and/or hydrogen blends. PHMSA will address climate change in part by funding research projects that reduce methane emissions on regulated infrastructure, which will be done in coordination with stakeholders and interagency partners. PHMSA

plans to identify research gaps for hydrogen and/or various hydrogen blends in natural gas pipeline facilities. These include gas transmission or gas distribution systems, compressor stations, and gas storage facilities that reflect current projections for future pipeline systems and storage use. Furthermore, PHMSA plans to include a recommended prioritization of RD&T topic areas in future solicitations.

2. Liquefied Natural Gas (LNG) Safety ($6 million) - According to the U.S. Energy Information Administration (EIA) long term forecast, LNG exports are expected to reach approximately 10 trillion cubic feet (27.34 billion cubic feet per day (Bcf/d)) by 2033 surpassing natural gas exports via pipelines to Mexico and Canada.[12] The increasing growth in the production and export of LNG has required PHMSA to provide clear regulatory guidance within the changing energy landscape. In addition, this has resulted in PHMSA initiating updates to its regulations for LNG facilities to address the mandates in the Protecting Our Infrastructure of Pipelines and Enhancing Safety (PIPES) Acts of 2016 and 2020 (Pub. L. 114-183 and Pub. L. 116-260, Division R). LNG research activities will address safety system testing, hazard mitigation models, and emerging technologies. The close coordination with LNG sector stakeholders will seek research solutions to address performance-based risk reduction at every type of LNG facility during site location, design, construction, operations, maintenance, and fire protection activities.

   Section 111 of the Protecting our Infrastructure of Pipelines and Enhancing Safety Act of 2020, Pub. L. 116-260 (PIPES Act) required PHMSA to create a report on the development of a National Center of Excellence for Liquefied Natural Gas Safety (NCELNG).[13] PHMSA submitted its report on the LNG COE on December 5, 2022, and in the FY 2023 Consolidated Appropriations Act, Congress allocated up to $8.4 million to PHMSA for the creation of the LNG COE. The funding provides $2.4 million for the establishment of the Center with up $6 million available for LNG focused research. PHMSA has initiated planning for the creation of the LNG COE as required in FY 2023.

3. Underground Natural Gas Storage (UNGS) Facilities Safety ($1.5 million) - In October of 2015, a containment failure of stored natural gas from Southern California Gas Company's, which operates the storage facility, Aliso Canyon Gas Storage Field resulted in an atmospheric release of 97,100 metric tons of methane.[14] 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 more than 17,000 wells associated with UNGS facilities in the United States. PHMSA will pursue additional UNGS research gaps in FY 2024 for risk assessments, well casing integrity investigations, subsurface safety valve testing, subsurface and facility-level equipment analysis, and knowledge generation on maintenance practices for UNGS wells. Furthermore, PHMSA will

[12] According to the EIA's Annual Energy Outlook 2022, the 28 Bcf/d export capacity is based on the high oil and gas supply case projection that assumes higher resource availability and lower prices of natural gas.
[13] https://www.phmsa.dot.gov/news/report-congress-national-center-excellence-lng-safety.
[14] https://www.energy.gov/sites/prod/files/2016/10/f33/Ensuring%20Safe%20and%20Reliable%20Underground%20Natural%20Gas%20Storage%20-%20Final%20Report.pdf

use lessons learned from facility inspections and audits conducted over the past few years to identify research gaps in UNGS.

4. Pipeline Anomaly Detection/Characterization ($1.0 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. Incident data by cause continues to show corrosion as a leading cause of pipeline incidents. Therefore, corrosion will remain a focus of pipeline safety research investments. 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 support 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 ($1.5 million) - Based on data from the 2022 EPA GHGI, natural gas transmission and distribution pipeline systems accounted for 28 percent of total U.S. methane emissions from natural gas systems while LNG and UNGS facilities accounted for another 5 percent, which combines to comprise approximately third of total U.S. methane emissions from natural gas systems (2022 EPA GHGI Table 3-69 and annex 3.6, table 3.6-1).

   The anticipated goals of pipeline leak detection and repair research strongly support efforts to abate fugitive and operational methane releases. The PSRP expects to fund future research focused on operational and maintenance functions that cause the release of methane 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
   - 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)
   - Further development of economical leak detection systems for home monitoring of gas leaks, to reduce the device cost and to prioritize identification of ideal device placement within a home.

   In FY 2024, PHMSA expects to address gaps in detection, concentration measurement, and flow rate estimation that are not part of FY 2022 and 2023 methane leak detection research.

6. Pipeline Threat Prevention ($1.5 million) - As damage to pipelines by excavation and other outside forces continues to be a leading cause of pipeline failures, preventing, or reducing damage will improve pipeline safety and reduce methane emissions.[15] PHMSA's research

[15] https://www.phmsa.dot.gov/data-and-statistics/pipeline/national-pipeline-performance-measures

will develop new or improved tools and technology to aid in the prevention and reduction of excavation damage to pipelines, thereby enhancing safety and preventing or reducing releases into the environment. In addition, the PSRP will focus on applications for new failure-prevention machine learning methodologies, investigations into corrosion prevention techniques, and risk assessment modeling that addresses and/or remediates pipeline failures from these threats.

7. Repair/Rehabilitation ($1.5 million) - As damaged coatings and corrosion are major problems for pipelines, reliable methods of repairing pipelines to bring the systems back online are critical to safety. This focus area will concentrate on enhanced repair materials, techniques, processes, tools, and/or technology that support this objective. Research priorities may be identified to further support PHMSA efforts to help repair, rehabilitate or replace 1,000 miles of aging, leak-prone, municipality and community-owned legacy gas distribution pipeline infrastructure. The degrading nature of iron alloys, the age of the pipelines, and weak pipe joint designs will receive higher focus since these areas increase the risk of accidents and climate damaging methane emissions.

Expected Outputs/Products

Research investments into pipeline-, LNG-, or UNGS-related challenges may result in published analytical outcomes, small-scale tests, and, in some cases, full-scale demonstration projects that lead to new technology and scientific methods that improve pipeline safety. The results from each completed project are provided in final reports shared publicly on the PHMSA website and/or the National Transportation Library. Researchers are required to disseminate their findings through presentations and publications at conferences or in peer-reviewed journals. Completed technology development projects may result in new patents or products for commercialized adoption. PHMSA plans to continue tracking each project's performance using metrics to monitor the progress of the research and the readiness of the technology for commercial or government adoption.

In September of 2022, PHMSA awarded 15 new projects to develop 7 new technology projects and 8 projects to promote new knowledge for decision-makers. The RD&T announcement focused on the following seven research areas:

- Rehabilitation of Aging Cast Iron Pipelines
- Underground Natural Gas/Hydrogen Storage
- Utilization of Inspection Tools on Hydrogen Pipelines
- Hydrogen Pipeline Network Components
- Methane/Carbon Dioxide (CO_2) Mitigation: Construction Through Operations
- Breakout Tanks: Preventing Corrosion of Tank Bottoms
- Liquefied Natural Gas.

Also in September of 2022, PHMSA awarded six new projects through CAAP addressing knowledge development for decision-makers focused on the following four research topics:

- Excessive Cathodic Protection on Vintage Pipelines
- Development of Structural Liner Material
- Pipeline Infrastructure Modernization – Hydrogen Network
- Determination of Potential Impact Radius for CO_2 Pipelines.

In June of 2022, PHMSA awarded two new projects through participation in DOT's SBIR program to conduct proof of concept research in the following areas:

- Vibration Sensing System to Monitor for Potential Excavation Damage
- UNGS Advanced Leak Identification and Well Control Solutions

Establishing IAAs with other federal agencies occurs when PHMSA aligns the safety research needs with the expertise and capabilities of federal labs. This occurs as part of the ongoing dialog with the collaboration partners mentioned in the previous section. In August of 2022, PHMSA and the National Institute of Standards and Technology entered an IAA to review current codes and standards for gaps in qualification requirements for welds in pipelines intended for hydrogen transportation. In FY 2023, PHMSA intends to enter into IAAs with DOE to further address the technical challenges associated with underground gas storage of hydrogen and also CO_2.

PHMSA is developing the Core Research Announcement Number 9 and the NOFO for FY 2023. Some of the potential research gaps may be on repair, rehabilitation, replacement of leak prone, legacy cast iron pipelines, integrity of underground fuel storage, including hydrogen, LNG facility design and construction, LNG facility siting, LNG facility fire protection, and LNG facility operation and maintenance.

PHMSA's research results in scholarly publications and commercially viable products to improve pipeline safety. By the period of FY2022, PHMSA's RD&T investments have resulted in 1 patent application, 17 published papers, and 2 commercialized technologies.

The following technology transfer was registered in FY 2022:

Pipeline Threat Prevention.

PHMSA registered a technology transfer for the project entitled "*Improved Tools to Locate Buried Pipelines in a Congested Underground*."[16] The installation of underground utilities, such as electrical, natural gas, water, cable, and sewer lines are a common practice that provide protection from surface activities, vehicles, and the weather. In accordance with state and federal laws, before excavating in close proximity to these underground facilities, notification of the excavation must be provided, by calling 811, to the operators of those facilities so they can locate and mark those facilities for safe excavation. There are older plastic pipelines that are not easily located or are unlocatable due to lack of tracer wire and accurate records. The purpose of this project was to develop and commercialize a geospatial probe to locate and map existing buried pipelines that are not locatable through insertion into live gas pipelines. The developed probe can accurately map underground pipeline locations to help safe excavation around these facilities. The probe can enter 2-inch and larger diameter pipe to provide information about their location. The system achieved a total insertion of 600 feet in length with successful live demonstrations with four natural gas utility operators.

3D Mapping Probe and Field Deployment

Anomaly Detection and Characterization.

PHMSA registered a technology transfer for the project entitled "Electro Magnetic Acoustic Transducer (EMAT) Sensor for Small Diameter Unpiggable Pipes; Prototype and Testing."[17] The project main objective was to build a field-ready EMAT sensor prototype and perform controlled field tests to assess its performance requirements and capabilities in

Pull testing performed by Q-Inline at testing facilities in Texas. Picture courtesy: Operations Technology Development

[16] https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=734.
[17] https://primis.phmsa.dot.gov/matrix/PrjHome.rdm?prj=653

identifying and characterizing pipe defects. The field-ready prototype was designed for 8-inch pipes. The project developed and then demonstrated the ability of the EMAT crack tool to detect tight/closed cracks down to 2 millimeter deep for 8-inch diameter pipes in traditionally difficult to inspect pipelines.

Picture courtesy: Baker Hughes/Qi2 Element

The intellectual property from this research and from the prior research project under PHMSA contract #DTPH56-13-T-000007 evolved into a free-swimming tool that operates at 2 meters per second, navigates 1.5 diameter bends, and can be pressurized to 2,200 pounds per square inch. The EMAT Crack In-Line Inspection Tool is now being offered by Baker Hughes/Qi2 Elements.

PHMSA supports evaluation and performance measurement efforts related to the Foundations for Evidence-Based Policymaking Act of 2018. The PSRP has specific objectives focused on advancing a safe and reliable transportation system, promoting emerging technologies, and identifying safety challenges and research gaps that support the priorities and objectives of the Department and PHMSA. PHMSA evaluates the program's outputs, outcomes, and impacts across multiple research focus areas as described below in support of PHMSA's safety mission and the Department's strategic goals.

Climate Change Solutions/Hydrogen. PHMSA will continue to invest in research initiatives to promote the DOT's strategic goals related to climate change solutions and decarbonization. Research outputs would provide solutions to safely store hydrogen gas and/or hydrogen gas blended with natural gas in underground storage facilities, as well as determine practical methods to optimize or repurpose existing pipeline networks to safely transport hydrogen or hydrogen-blends. Additional research outputs would provide knowledge on the impact of hydrogen and hydrogen/blends concentrations on inline inspection tools used to characterize the integrity of an operator's pipeline system. Research outcomes in this focus area will work to remove technical and safety barriers to transporting emerging fuels such as hydrogen by pipelines. Hydrogen can serve as a sustainable power generating fuel and could reduce GHG emissions by blending hydrogen into natural gas pipelines. Impacts from research investments in this focus area would expand the development and safe transportation by pipeline of gaseous hydrogen and supercritical CO_2. Both are integral to increase the production of green hydrogen, which is developed from renewable fuels, and blue hydrogen, where the climate impact is decreased through CO_2 capture and storage or utilization.

Liquified Natural Gas Safety. PHMSA will continue to invest in LNG safety research to address the safety risks and operational challenges from LNG facilities, as well as foster development of new technologies and alternative designs for LNG storage and piping systems. As an example,

there are currently no suitable industry standards that identify best practices or establish minimum acceptable inspection requirements for cryogenic storage tanks. Research outputs will yield recommendations on optimal inspection intervals and identify best practices to improve the inspection and testing of aboveground cryogenic LNG storage tanks. Outcomes from the research will lead to changes to federal regulations or industry standards and provide immediate benefit in terms of inspection standardization for LNG tanks to limit operational safety risks to employees and the public to acceptable levels. The impact of LNG research will provide a consistent and systematic methodology for improving the safety and integrity of LNG storage tanks.

Underground Natural Gas Storage Facility Safety. PHMSA will continue research to improve the safety of UNGS facilities over their full life-cycle with a focus on design and reliability improvements to storage well equipment and maintenance practices. Research outputs from UNGS projects will provide reliability-based methodologies focused on well integrity management and corrosion protection practices while evaluating the effectiveness of real-time, continuous pressure monitoring systems for well surveillance and leak monitoring. PHMSA will consider incorporating research project outcomes into industry standards or best practices as minimum requirements and/or guidance for storage well casing integrity management. Furthermore, the research outcomes will provide operators with improved efficiency in managing casing corrosion, thereby potentially reducing delayed maintenance-driven well casing incidents. The impacts from UNGS research results will support new policy development on the safe operation of these facilities and reduce uncontrolled releases of gas into the atmosphere.

Pipeline Anomaly Detection/Characterization. PHMSA will continue to fund research to improve pipeline anomaly detection and characterization in steel and non-metallic or composite pipes. Research outputs in this area are designed to identify critical defects or anomalies within pipelines and provide PHMSA and pipeline operators with effective instrumentation and methodologies to find, assess, and evaluate manufacturing defects and in-service anomalies in pipe. Research outcomes will better inform PHMSA and pipeline operators to make integrity management decisions on steel and composite pipe systems to support safer operations and aid in determining a pipeline's fitness for service. Impacts from the research results will increase stakeholder's confidence in pipeline technologies and the accuracy of improved decision-making tools for integrity management. Furthermore, the research impacts will provide pipeline operators with effective instrumentation for detection, allowing for accurate remediation measures that reduce the likelihood of pipeline failures harming the public or environment.

Pipeline Leak Detection. PHMSA will continue investing in research projects to develop new or improved tools and technology solutions to locate, quantify, and repair liquid or natural gas pipeline leaks. Project outputs will develop, test, and deploy advanced leak detection platforms (ground-based, aerial, and satellite) and protocols under real-time field conditions to provide pipeline operators with critical knowledge on gas behavior and real-time data to help locate and quantify natural gas leaks. Research outcomes will provide the ability to quantify underground leaks utilizing real-time data, which can reduce the risk of an incident caused by migrating gas to a residence or a prolonged release of methane into the environment. Impacts from the research findings will lead to further development of advanced leak detection monitoring, identification,

and measurement systems for gas and hazardous liquid pipelines. This research will enable operators to expeditiously repair leaks, thereby limiting the duration of methane emissions. Ultimately, this safety improvement will also help to advance the Administration's strategic goal to tackle climate change by lowering the United States' cumulative methane emissions.

Pipeline Threat Prevention. Excavation damage and vehicular damage to pipelines continue to be causes of serious injury and pipeline incidents. PHMSA will continue to invest in research to prevent pipeline threats and damage. Research outputs in this focus area will refine tools to develop sensing platforms to help operators map existing pipelines, make existing unlocatable plastic pipes locatable in advance of planned excavations, develop markers to locate new plastic pipes without the need for a separate tracer wire, or alert operators of possible excavation damage to pipelines. Research outcomes will allow operators to utilize technologies to mitigate excavation pipeline damage and allow operators to quickly detect and respond to damages and leaks to the pipeline system. Research findings will help improve safety by identifying better methods to detect underground pipelines and by helping to prevent excavation damage to buried pipelines. This will ensure an effective, efficient, and reliable underground utility network and reduce GHG emissions caused by excavation damage.

Repair/Rehabilitation. PHMSA will continue to invest in improving anomaly repair and pipe remediation and rehabilitation. Research outputs will provide reliable methods to repair damaged coatings and corrosion damage—a major cause of pipeline incidents, as well as develop testing protocols needed when using composite materials—which are the most common materials used for pipeline repairs. Research outputs will also develop repair materials, techniques, processes, tools, and/or technology designed to quickly bring pipeline systems back online. Research outcomes will provide the pipeline industry with validated and safe solutions to rapidly repair and return pipelines to service, reducing economic losses and customer inconvenience. Impacts from these research investments would advance technological solutions and have longstanding impacts on: 1) safety, with the repair of aging pipelines; 2) equity, with the provision of better service to often underserved communities; and, 3) climate change solutions, with pipeline rehabilitation or new pipeline installation that will minimize methane emissions.

FY 2024 Program Description
Hazardous Materials Safety Research

FY 2024 Funding Request: $7,570,000

Program Description/Activities

PHMSA's mission is to protect people and the environment by advancing the safe transportation of energy and other hazardous materials essential to our daily lives. The Office of Hazardous Materials Safety is responsible for allowing the 1.2 million daily shipments of hazardous material to arrive safely at their destination. The Hazardous Material Safety Research Program (HMSRP) conducts hazardous materials safety research to reduce the risks associated with the transportation of hazardous materials and to identify and evaluate new technologies that facilitate the safe, secure, and efficient transportation of hazardous material.

The HMSRP focuses on four core activity areas of research: risk management and mitigation, package integrity, emerging technologies, and technical analysis to aid risk assessments. Each core area is described below.

Activities

1. Risk Management and Mitigation ($1.5 million). Research in risk management and mitigation is essential to reducing the number of injuries and fatalities-related incidents that involve hazardous material transportation. Each year, 99.99 percent of hazardous material shipments arrive at their destination without incident; but still, about 24,000 incidents are reported to PHMSA every year. Hazardous material transportation incidents can impact communities and damage America's transportation infrastructure. The HMSRP manages the unique risks from transporting hazardous materials by facilitating research to identify and analyze safety gaps. These gaps often include risks presented by high-consequence materials and rapidly developing industries, such as autonomous vehicles and the lithium-ion battery industry. Disadvantaged communities can be disproportionately impacted by hazardous material transportation incidents, as they are frequently located adjacent to major transportation routes (railways and interstate highways). HMSRP's risk reduction efforts directly address inequities that result from uneven exposure to the consequences of hazardous material transportation incidents.

   Research on the safe transportation of lithium-ion batteries is a key project area for the HMSRP. This includes ongoing research on early failure detection devices for lithium-ion batteries and research on novel packaging materials for battery casings. The number, size, and potential energy of lithium batteries in transportation continues to grow, driven by accelerated adoption of electric vehicles and consumer devices. Enabling the safe transportation of lithium batteries, including used batteries transported for disposal and recycling, is critical to creating a sustainable 21st century economy and meeting the Administration's climate goals. HMSRP— through collaborative work with Naval Research Lab— continues to develop strategies to reduce the risk of transporting de-energized, end-of-

life lithium-ion batteries. Risk management and mitigation strategies related to transporting lithium-ion batteries could also address the increase of battery related fires at e-waste and battery recycling facilities.

The HMSRP has used SBIR Phase I proposals to identify and subsequently avoid obstacles that prevent the safe transportation of hazardous materials by autonomous vehicles. For example, the need for leak detectors would increase absent a driver to actively monitor the vehicle. Through the programs SBIR Phase I topics, the program has identified a small business to develop a leak detector prototype for autonomous vehicles. The HMSRP will continue its research efforts to identify other significant risk factors when using unmanned aerial systems or other autonomous delivery vehicles in FY 2024.

The HMSRP will continue to solicit and conduct risk management and mitigation research in FY 2024 to address new risks in transporting energy products to market and develop new packaging materials for batteries and other hazardous materials. The impact of these ongoing and future research projects will continue to assist in reducing the number of facilities and significant injuries related to the transportation of hazardous material.

2. Package Integrity ($2.5 million). Packaging integrity research informs standards that ensure hazardous materials remain contained within original packaging during transportation. Lithium batteries can experience a failure mode known as “thermal runaway” that creates a dangerous amount of heat and toxic gases. Large-scale thermal runaway can have devastating consequences. Examples include an April 2017 Union Pacific rail car explosion in downtown Houston, and a March 2022 Port of Los Angeles/Long Beach container fire. The HMSRP program is pursuing a smart packaging solution that aims to predict and contain the hazardous effects from batteries in thermal runaway. This project is currently the HMSRP’s first-ever successfully funded Phase II project through the SBIR program. Additionally, ongoing work from FY 2020 examines the use of aerogels as packaging materials for lithium-ion batteries.

   Packaging integrity research also develops new materials for hazardous materials packaging. Large bulk packages for hazardous liquids and gases are typically manufactured from steel or aluminum. PHMSA and the international community are considering authorizing the use of Fiber-Reinforced Plastic (FRP) intermodal portable tanks, which are substantially lighter than equivalent steel tanks and, therefore, are able to carry more material per trip, increasing transportation efficiency. The HMSRP is developing a research program to evaluate the strength, impact resistance, and fire survivability characteristics of these FRP tanks to ensure that they will perform in an equivalent manner to current steel tanks authorized for transportation.

3. Emerging Technologies ($2.6 million). DOT FY 2022-2026 strategic goals task PHMSA to "invest in purpose-driven research and innovation to meet the challenges of the present and modernize a transportation system of the future that serves everyone today and in the decades to come." The HMSRP has a well-established history in researching emerging technologies. The HMSRP has supported and piloted projects to analyze new packaging materials, innovative packaging, and new technologies for transportation operations. Past projects have

included W-Ink, a device that aids the rapid classification of hazardous materials in transportation and composite metal foams, a lightweight material that can be incorporated into manufacturing of tank cars or scaled to mitigate effects of thermal stress and fatigue. Current and future projects support grid storage needed for green infrastructure through novel methods to discharge end-of-life and damaged batteries.

The SBIR program is a proven conduit to bring innovative ideas to market that enhance the safety of hazardous material transportation while also supporting economic strength and global competitiveness. The SBIR program enables small businesses to take risks that would otherwise not be acceptable under regular business operations and leverages innovative perspectives on hazardous material safety. In FY 2024, the HMSRP will continue to use the SBIR program to seek out potential emerging technologies that could assist in bringing innovative technologies to the transportation and address climate change issues.

4. Technical Analysis to Aid Risk Assessments ($1.0 million). Accurate incident data is critical to understanding the risks of transporting hazardous materials to people and the environment. From 2016 to 2021, over 80,000 hazardous materials-related incidents involving package failure were reported to PHMSA. The HMSRP uses incident data to evaluate hazardous material transportation activities, events, and incidents. Potential research projects for FY 2024 will come from using DOT 5800.1 incident data to understand root causes and patterns of hazardous material transportation incidents. Understanding the reasons for packaging failures and causes of incidents is vital to reducing hazardous material transportation injuries and fatalities. This knowledge can drive inspection and test methods that directly mitigate identified root causes.

   The HRSRP collaborates with the U.S. Census Bureau to conduct a yearly hazardous materials packaging commodity survey within the U.S. Census Bureau Commodity Flow Survey. The yearly hazardous materials survey yields a list of hazardous materials shipped by establishment, packaging type performance-oriented or specification packaging identity, quantity and weight of material shipped, and mode of transportation for each of the different packaging types. Knowledge that a particular hazardous materials is being transported in higher quantities might lead to new packaging requirements. This survey is also the most timely large-scale data collection that will show changes in the volume of carbon dioxide transported from capture sites to sequestration sites. The HMSRP is also interested in building risk frameworks using geo-spatial mapping to determine the risk of hazardous materials incidents at specific locations. The program has identified a project with the Volpe Center to add risk assessments as an optimization factor to Volpe's existing Freight and Fuel Transportation Optimization Tool. The tool can be used to assess the relative risk of different modal options for transporting hazardous materials and enable scenario exploration to evaluate low-risk transportation modes and routes. This framework could predict where routing might reduce risk relative to other routes operators may choose.

Expected Outputs/Products

The HMSRP supports the Department's strategic goals. Safety is our highest priority; specifically reducing the human consequences from the release of hazardous materials in transportation. The focus on our safety mission also supports the goals of improving equity, addressing the climate

crisis, improving sustainability, and maintaining the nation’s economic strength and innovative spirit.

PHMSA's mission is to protect people and the environment by advancing the safe transportation of energy and other hazardous materials essential to our daily lives. The research conducted by the HMSRP assists development of new regulatory standards, improves inspection and packaging testing methods, and reduces high-consequence hazardous material related incidents. Disadvantaged and underserved communities can be disproportionately impacted by hazardous material transportation incidents because of their proximity to major transportation routes and lower relative response resources. Therefore, through the research efforts that reduce the number and consequences of hazardous material transportation incidents, the HMSRP seeks to reduce the inequities facing these communities.

To address the climate crisis, and to encourage sustainability, the HMSRP has set a target to use 25 percent of its funds on research that supports the development and implementation of new sustainable energy sources. The HMSRP uses our research forum and other solicitations to collect information on efforts pertaining to emission reduction and sustainable energy sources. Other potential planned research includes evaluating the use of recycled plastics from previously used hazardous material packages as raw material for new plastic hazardous material packages. This could have a double benefit of reducing carbon emissions by decreasing reliance on “virgin” plastic resins, as well as reducing waste by incentivizing the recycling of used packages.

The HMSRP consistently seeks innovative and emerging technology research when engaging with its diverse stakeholders through the SBIR. The HMSRP has participated in the SBIR program for three years. SBIR allows the program to seek technologies outside of typical solicitations while supporting innovation and small business. In FY 2021, the program awarded its first Phase II project, which will assist in developing an intelligent lithium-ion battery package. In FY 2022, the program solicited two SBIR topics, Autonomous Vehicle Leak Detectors and Non-Destructive Testing for Cylinders. In FY 2023 and FY 2024, the program will continue to engage with its stakeholders that will assist in forming SBIR topics. Through the SBIR program, the HMSRP will continue to seek new technologies to meet the challenges of an ever-changing transportation system.

HMSRP research will continue to play an important role in advancing the safe transportation of hazardous materials and energy products essential to our daily lives. The core research areas in risk assessment, management, and mitigation, packaging integrity, and emerging technology will support the Department’s strategic goals on Safety, Global Competitiveness and Economic Strength, Equity, and Climate and Sustainability. Projects in line for FY 2024 will help analyze risks and hazards associated with aerosols and dissolved gasses, help bring new technologies to market that reduce time in tank and cylinder inspections, characterize the effects of accidents on bulk packaging, and aid in risk mitigation through transportation route optimization.

Projects that will be brought online from efforts in FY 2024 will come from a new broad agency announcement and the SBIR, which incorporates research needs identified by stakeholders at meetings, conferences, and the HMSRP annual forum.

The HMSRP employs partnerships with stakeholders, small businesses, and IAAs to execute research projects. Through the SBIR, Broad Agency Announcements (BAA), and IAAs, these different solicitations are designed to develop research proposals into potential technology transfers or regulatory outcomes. The HRMP will continue to engage with existing partners at the Transportation Research Board and the Interagency Advanced Power Group and build new relationships with the National Science Foundation. In FY 2024, the HMSRP will continue to carry out the following program activities:

Small Business Innovative Research

The SBIR program encourages small businesses to engage in federal research programs with the goal of commercialization of their technology. The HMSRP has submitted SBIR Phase I topics and evaluated proposals over the last couple of years. SBIR allows the program to engage with small businesses, resulting in the development of new technologies for hazardous materials safety. The program will continue developing and evaluating new topics and working with small businesses in FY 2024.

Broad Agency Announcement

The HMSRP uses BAA as another tool to solicit and award funding for hazardous material research to external stakeholders. The BAA topics are generated from internal and external engagements such as the program's research forum each year.

Interagency Agreements

The HMSRP collaborates with other government research organizations through IAAs to conduct research. PHMSA currently has IAAs with the U.S. DOT Volpe National Transportation Systems Center, U.S. Naval Research Laboratory, Argonne National Laboratory, and several of our modal partners like the Federal Railway Administration and Federal Motor Carrier Safety Administration, Federal Aviation Administration, and the U.S. Coast Guard.

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V: Information Technology Expenditure

FY 2024 IT BUDGET REQUEST			
INFORMATION TECHNOLOGY			
DEPARTMENT OF TRANSPORTATION			
PIPELINE AND HAZARDOUS MATERIALS SAFETY ADMINISTRATION			
BUDGET AUTHORITY			
Budget Account	**FY 2022 Enacted**	**FY 2023 Enacted**	**FY 2024 Request**
Pipeline Safety	**$ 11,374**	**$ 18,044**	**$ 18,704**
Commodity IT SS WCF	*5,458*	*7,094*	*7,535*
Programmatic IT SS WCF	*-*	*-*	*-*
Modal IT	*5,916*	*10,950*	*11,169*
Hazardous Materials Safety	**$ 8,248**	**$ 10,890**	**$ 11,536**
Commodity IT SS WCF	*3,343*	*4,140*	*4,651*
Programmatic IT SS WCF	*-*	*-*	*-*
Modal IT	*4,905*	*6,750*	*6,885*
Operational Expenses	**$ 5,665**	**$ 5,922**	**$ 6,685**
Commodity IT SS WCF	*1,093*	*1,350*	*1,521*
Programmatic IT SS WCF	*-*	*-*	*-*
Modal IT	*4,572*	*4,572*	*5,164*
Total	**$ 25,287**	**$ 34,856**	**$ 36,925**

The Pipeline and Hazardous Materials Safety Administration (PHMSA) is requesting **$36.93 million** in FY 2024 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 2024 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 **$13.71 million** for the purchase of IT services for Department-run systems through the working capital fund (WCF). This is an increase of $1.10 million and includes all desktop service, servers and most 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:

- **National Pipeline Mapping System (NPMS)** – PHMSA requests **$4.30 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 and new pipeline construction inspections. With the continued expansion of the national pipeline network, this is an even more critical tool going forward.

- **Pipeline Risk Management Information System (PRIMIS)** – PHMSA requests **$2.76 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 (Inspection Assistant).

- **PHMSA Datamart** – PHMSA requests **$2.11 million** 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 **$1.02 million** 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 **$979 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 modal IT investments:

- **Information Technology Support** – PHMSA requests **$2.58 million** for expertise and safety mission support for PHMSA regional offices, operations and maintenance for Hazardous Materials Safety specific safety information systems, and application technical assistance.

- **PHMSA Portal System** – PHMSA requests **$2.00 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.

- **PHMSA Datamart** – PHMSA requests **$1.88 million** to collect and report hazardous material incident data, associate causality, and attach data elements that allow for use in inspection planning and safety standards design.

- **Cybersecurity** – PHMSA requests **$430 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 modal IT investments:

- **Information technology support** – PHMSA requests **$2.75 million** for expertise and safety mission support for PHMSA regional offices, operations and maintenance for other safety systems and application modernization and assistance for the investments above.

- **PHMSA Portal System** – PHMSA requests **$1.88 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.

- **Cybersecurity** – PHMSA requests **$534 thousand** for security activities to safeguard PHMSA's mission systems and data, as well as to support compliance with Cybersecurity Standards (FISMA and NIST).