Pipeline Research Council International

Leak Detection (LD) SRP Update

Under Surveillance, Operations, and Monitoring (SOM)

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PRCI™
LEADING PIPELINE RESEARCH

Leak Detection

IMPORTANT

SRP Goal

To standardize and advance the testing, development, and application of reliable leak detection technologies for energy pipelines, enabling faster detection and reducing the safety and environmental impacts of liquid and gas leaks.

NECESSARY

Gap(s) to solve

The key gaps are the lack of consistent, standardized methods for testing and applying leak detection technologies, along with limitations in detecting, locating, validating, and quantifying leaks reliably across liquid, gas, and methane-emissions applications. The program also seeks to close gaps in CPM and external sensor performance, industry guidance, testing capabilities, leak-event data, remote sensing, and instrumentation needed for broader and more confident implementation.

Alignment to PRCI research objectives:

- INTEGRITY ✓
- EFFICIENCY ✓
- SUSTAINABILITY ✓
- TECHNOLOGY ✓
- WORKFORCE
- SHARING ✓

Current LD SRP Completion Roadmap

Project Number	Title	Total Budget	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2024 Q2	2024 Q3	2024 Q4	2025 Q1	2025 Q2	2025 Q3	2025 Q4	2026 Q1	2026 Q2	2026 Q3	2026 Q4	2027 Q1	2027 Q2	2027 Q3	2027 Q4
LD-1-01	Internal and External Leak Detection Technology Test Facility Feasibility Assessment	75,000				SOM																
LD-1-02	Liquid Pipeline Leak Event Primary Data Repository	200,000							SOM													
LD-1-03	Technical Best Practice for Computational Pipeline Monitoring on Liquid Pipelines	290,000					SOM															
LD-1-04	Technical Understanding of Gas Leak Events and Placement of Leak Detection Sensors	75,000								SOM												
LD-2-01	Improve Leak Detection Technology Performance Through Retrofittable Sensors	170,000							MEAS													
LD-1-05	Assessment of Optical Technologies to Detect, Locate, and Quantify Methane Emission	292,120							CPS													
LD-1-06	Industry Technical Best Practice Using Inventory and CPM for Natural Gas Pipeline Leak Detection	125,000							SOM													
CPS-17-13	Testing of Macro-scale Gas Pipeline Leak Detection Technologies	150,000							SOM													
LD-01-08	Leak Rate Estimation from Pipeline Defects	220,000									SOM											
LD-03-01	Characteristics of Gas Leak Signatures	200,000									CPS											
LD-01-10/11	Leak Detection Sensor-Based Technology Test Facility Design	100,000									SOM								TBD			
5089	LD-2-01 Testing - Lab-Scale Evaluation of Non-Intrusive, Retrofittable Sensors for CPM Leak Detection Enhancements	Uncontracted Funds																				
5090	Detection Technologies for Natural Gas Operational and Technology Acceptance	Uncontracted Funds																				
Active	Project Schedule In-Progress	Annual SRP Budget	$ 320,000				$ 718,560				$ 858,560											
Completed	Project Schedule Complete																					
Future	Cancelled - Funds to be reallocated to testing																					

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Current LD SRP Funding Roadmap

		320,000	393,777	393,777	718,560	642,783	534,837	107,946	858,560	858,560	239,500	619,060	727,006
		FY2023			FY2024				FY2025				
Project #	Project title	Orginal Budget	Modified Budget	Actual	Orginal Budget	Modified Budget	Actual	Remaining	Orginal Budget	Modified Budget	Actual	Remaining	Remaining Budget Overall
LD-1-01	LD Facility Feasibility	75,000	58,500	58,500									-
LD-1-02	LD Event Database Framework	50,000	45,000	45,000	100,000	67,386	67,000	386	50,000	25,000	-	25,000	25,386
LD-1-03	CPM Best Practice Liquid	50,000	44,977	44,977	240,000	182,987	182,987	-					-
LD-1-04	Gas Leak Placement	75,000	177,300	177,300				-	-	25,000	25,000	-	-
LD-2-01	Retrofittable Sensors	70,000	68,000	68,000	100,000	25,000	-	25,000					25,000
LD-1-05	Optical Sensors				153,560	153,560	74,000	79,560	138,560	138,560	-	138,560	218,120
LD-1-06	CPM Best Practice Gas				50,000	63,850	63,850	-	75,000	75,000	-	75,000	75,000
CPS-17-13	Macro LD Tech				75,000	75,000	72,000	3,000	75,000	75,000	-	75,000	78,000
LD-1-07	Technical Guidance for ELDS					75,000	75,000	-					-
LD-03-01	Characteristics of Gas Leak Signatures							-	200,000	200,000	-	200,000	200,000
LD-01-08	Leak Rate Estimation							-	220,000	220,000	214,500	5,500	5,500
LD-01-10	Sensor-based Test Facility Design (Gas)							-	50,000	50,000		50,000	50,000
LD-01-11	Pipeline Segment Test Facility Design (Liquid)							-	50,000	50,000		50,000	50,000

*Budget Modifications via SRP Steeting Committee Motions

Remaining funds will be reallocated to testing projects (5089/5090) upon the resolution of LD-01-10/11.

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Research Progress Updates

Show what has changed since the last update and connect every activity to the end goal.

SUPPORTED

Completed this period

- LD-1-02, LD-1-03, LD-1-05, LD-1-06, and LD-1-07.
- CPS-17-13 and LD-2-01

In Progress / Next Steps

- LD-1-04, and LD-1-08 will complete by 2nd quarter 2027.
- Risks – Testing phases for LD-2-01, LD-1-05, and CPS-17-13 are not moving forward due to current dependency on LD-01-10/11.
- Support Needed – LD-01-10/11 need more active members to initiate. Only 2 members have committed support.
- JEFI-10-11 need more active members to oversee R&D*

* Not under SRP but related

Expected Benefits and implementation

- Standards, guidance, training, or operator adoption path
- Expected safety / environmental benefits / cost