

U. S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration



Proposed Tech Transfer Plan

Government/Industry Pipeline R&D Forum

www.phmsa.dot.gov



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



R&D Results to End Users

- Keeps stakeholders informed
- Supports both quantitative and qualitative performance metrics
- Breeds program transparency and clarity
- Reduces/removes duplication
- Leverages shrinking resources
- Improves strategy and targeting of mutual challenges
- Supports/improves research quality
- Keeps programs consistently funded and facilitates expansion
- Most importantly – Brings change and needed improvements!



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



How do you transfer R&D results?

- Plan for it from the beginning
 - Categorize the needed (technology/standards/knowledge)
 - Identify end users
 - Develop plan or process connecting needs with users
- Structure the program around these categories
- Identify what is measurable
- Track and measure the connection
- Report publicly



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



Transferring Research Results

What is our plan?

PHMSA Pipeline Safety Research Program Objectives

Developing Technology	Strengthening Consensus Standards	Promoting Knowledge
<ol style="list-style-type: none">1. Draft Technology Transfer Plan2. New Pre-Award Review Criteria3. New Peer Review Criteria4. New Contract Requirements	<ol style="list-style-type: none">1. PHMSA MOA with PSDOCC2. New Pre-Award Review Criteria3. New Peer Review Criteria4. New Contract Requirements	<ol style="list-style-type: none">1. Public Events2. Contract Requirements3. PHMSA R&D Website4. New Peer Review Criteria5. Webinars



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



Transferring Research Results

What is our plan?

PHMSA Pipeline Safety Research Program Objectives

Promoting Knowledge

- 1. Public Events**
Workshops, forums and meetings
- 2. Contract Requirements**
Submit results at a conference or in a journal
- 3. PHMSA R&D Website**
Individual project pages
Project objectives
Public deliverables
Program tracking the impact
- 4. New Peer Review Criteria**
Researchers graded on promoting knowledge
What actions are they doing?



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



Transferring Research Results

What is our plan?

PHMSA Pipeline Safety Research Program Objectives

Strengthening Consensus Standards

- 1. PHMSA MOA with Pipeline Standards Developing Organizations Coordinating Council**
 - Expedite knowledge from R&D to standards**
 - Measure the effect/impact**
- 2. New Pre-Award Review Criteria**
 - Categorizes output and identifies affected standards**
 - Supports the MOA and impact reporting**
- 3. New Peer Review Criteria**
 - Keeps projects on track for the desired impact**
- 4. New Contract Requirements**
 - Some expanded scope to work with SDOs**



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



Transferring Research Results

What is our plan?

PHMSA Pipeline Safety Research Program Objectives

Developing Technology

- 1. Draft Technology Transfer Plan**
- 2. New Pre-Award Review Criteria**
 - Researchers made to categorize project
 - Draft tech plan is required
- 3. New Peer Review Criteria**
 - Keeps projects on track for the desired impact
- 4. New Contract Requirements**
 - Scope modified to bring in possible end users



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



Technology Transfer

What is the draft plan?

- It's a guide to researchers and the PHMSA program
 - What are the important steps?
 - Who should be part of project scopes
 - How to incorporate demonstrations into scopes
- It's also a meter of the technology's readiness
 - Covering technology used:
 - Inside the pipe
 - On the pipe's outer surface
 - Area around the pipe including the ROW
 - Some distance from the area around the pipe

Technology Transfer

What is the draft plan?



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



- PHMSA's goals for this plan are:
 - Articulate and track the “technology story”
 - Keep PHMSA leadership informed
 - To have structured steps for go/no-go decision making
 - Transparency and clarity
 - Contract efficiency
 - To deliver field tested technology to a commercializer brought on early or later in the development

PHMSA Technology Readiness Meter

PHMSA Begins Investment		Technology Readiness Level (TRL)		PHMSA Concludes Investment	
Proof of Concept	Demonstrations Phase	7	Field Test	Prototype Field Tested Pre-Commercialization Phase	Commercialization
		6	Test Bed		
		5	Test Rig		
	Laboratory Development & Testing Phase	4	Launchers		
		3	Communications & Software		
		2	Packaging or Housing		
		1	Sensor		

PHMSA Technology Readiness Meter


Investment moves from left to right

PHMSA Begins Investment		Technology Readiness Level (TRL)		PHMSA Concludes Investment	
Proof of Concept	Demonstrations Phase	7	Field Test	Prototype Field Tested Pre-Commercialization Phase	Commercialization
		6	Test Bed		
		5	Test Rig		
	Laboratory Development & Testing Phase	4	Launchers		
		3	Communications & Software		
		2	Packaging or Housing		
		1	Sensor		



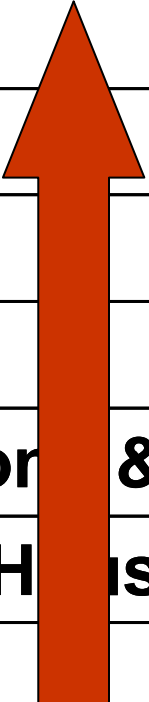
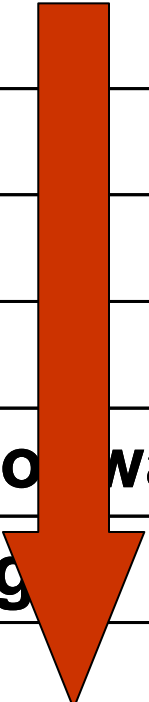
PHMSA Technology Readiness Meter

Two main phases, generally moving up over time

PHMSA Begins Investment	Technology Readiness Level (TRL)				PHMSA Concludes Investment
Proof of Concept	Demonstrations Phase		Field Test	Pre-Commercialization Phase	Commercialization
			Test Bed		
			Test Rig		
	Laboratory Development & Testing Phase		Launchers		
			Communications & Software		
			Packaging or Housing		
			Sensor		

PHMSA Technology Readiness Meter

Technology may move from lower to higher levels and back again


PHMSA Begins Investment		Technology Readiness Level (TRL)				PHMSA Concludes Investment	
Proof of Concept	Demonstrations Phase	7	Field Test				Prototype Field Tested
		6	Test Bed				
		5	Test Rig				
	Laboratory Development & Testing Phase	4	Launchers				
		3	Communication & Software				
		2	Packaging or Housing				
		1	Sensor				
						Pre-Commercialization Phase	Commercialization

before reaching the pre-commercial phase

PHMSA Technology Readiness Meter

Steps may be skipped or order may be varied based on technology type

PHMSA Begins Investment	Technology Readiness Level (TRL)		PHMSA Concludes Investment		
Proof of Concept	Demonstrations Phase	7	Field Test	Pre-Commercialization Phase Prototype Field Tested	Commercialization
		6	Test Bed		
		5	Test Rig		
	Laboratory Development & Testing Phase	4	Launchers		
		3	Communications & Software		
		2	Packaging or Housing		
		1	Sensor		



PHMSA Technology Readiness Meter

Steps may be skipped or order may be varied based on technology type

PHMSA Begins Investment	Technology Readiness Level (TRL)		PHMSA Concludes Investment		
Proof of Concept	Laboratory Development & Test Demonstrations Pre-Commercialization Phase	7	Field Test	Prototype Field Tested Pre-Commercialization Phase	Commercialization
		6	Test Bed		
		5	Test Rig		
		4	Launchers		
		3	Communications & Software		
		2	Packaging or Housing		
		1	Sensor		

PHMSA Technology Readiness Meter

Once successfully field tested, technology labeled pre-commercial.

PHMSA Begins Investment		Technology Readiness Level (TRL)		PHMSA Concludes Investment
Proof of Concept	Demonstrations Phase	7	Field Test	Pre-Commercialization Phase Prototype Field Tested Commercialization
		6	Test Bed	
		5	Test Rig	
	Laboratory Development & Testing Phase	4	Launchers	
		3	Communications & Software	
		2	Packaging or Housing	
		1	Sensor	

Multiple demonstrations at TRL 7 may be needed in securing a Commercial partner.



U.S. Department
of Transportation

Pipeline and
Hazardous Materials
Safety Administration



Next Steps

- We want to hear from you!
 - Pick up the draft tech plan or leave a note at the registration desk
 - Note the contact information
 - Contact us so we can organize a follow up discussion
- The revised plan will be posted on our website
- Future tech R&D proposals will incorporate ideals
- Program performance plan to incorporate process, finalized and posted on website

PHMSA R&D Homepage <http://primis.phmsa.dot.gov/rd/>