

Research Ideas for PRCI Funding Consideration

Last edited 3/11/2025, Gary Choquette

Background

This document describes the process of submitting a research idea to be considered for pipeline research as well as the process PRCI uses to fund that research.

Developing a Research Idea

It is recommended that potential research ideas are discussed with one or more PRCI members to gauge potential interest in the idea as well as provide feedback for potential approaches for the scope of work and the associated project deliverables. If there is sufficient interest, a high-level scope, schedule, and cost estimate should be developed, and the idea should be entered into PRCI's website.

Entering a Research Idea to PRCI's Website

Research ideas are submitted via [a web form on PRCI's website](#). To access the form, the user must have an authenticated account on PRCI's website. [New accounts can be set up here](#); expand the 'Register Here' section and use a valid email address¹ for account confirmation. Use the option 'I work for a PRCI contractor company'.

Fill in the form for a new research idea. Only PRCI staff can change the funding year and will likely do so. The year selected for the research idea is determined by the corresponding technical committee as they prioritize ideas and develop their research roadmaps; this will be discussed in more detail below. See Appendix A – Research Idea Example for guidance on the content desired for each section of the form. There are required fields on the form that must be completed before the research idea will be considered for funding. If there is/are fields that are required that are not properly completed, the corresponding form tracker will not have a check box next to it and the corresponding fields that need to be completed will be highlighted in red with a red asterisk next to it with 'This field is required!' noted in red below the field (see Figure 1). Once all the required fields are completed, click the 'Submit Research Idea' button on the 'Summary & Submit' page.

Note that it is possible to submit a research idea without identifying a PRCI member as a sponsor. However, it is very uncommon that such ideas reach the funding stage. As such, it is highly recommended that the research idea is discussed with at least one PRCI member and, if that member agrees, the member be identified as the idea's sponsor.

PRCI staff and PRCI members can see the contents of a research idea. Therefore, it is not recommended that confidential information be posted with a research idea. There is no guarantee that any research idea posted to PRIME will be funded and there is no guarantee that any idea submitted by a research contractor will be sole-source bid to the research contractor. It is not uncommon for PRCI to receive multiple idea submittals that are similar, PRCI reserves the right to merge or alter any idea submittals as they see fit. If research ideas are submitted with a contractor's proposal attached, PRCI will not use the submitted proposal for contracting purposes as it is

¹ Note, generic email accounts such as qq.com, and gmail.com may not be used for PRCI user accounts.

unlikely to conform exactly to PRCI's proposal requirements; a formal request for proposal will be issued from PRCI, even for sole-source projects.

Submit Research Idea

Idea form tracker

- 1 Research Idea Info
- 2 Contact Information
- 3 Timeline and Funding
- 4 In-Kind & Member Support
- 5 Attach Documents
- 6 Summary & Submit

Research Idea Information

Research Idea title*

Title

Date Submitted* 06/06/2021 X

Funding Year* 2021

Technical Committee*

this field is required!

Figure 1 – Example of required field that needs correction

Prioritizing Research Ideas

After research ideas are submitted, they are reviewed by the technical committee associated with the idea. The review will determine:

- If the idea is better addressed by another research technical committee. If so they will reassign the idea to another technical committee and notify that committee's Chair and the corresponding PRCI Program Manager of the reassignment.
- The technical committee will determine if the idea overlaps with any existing planned research or if it needs revisions to adjust the project scope and/or clarify the issues and result expected from the research. If changes are necessary, the submitter will be notified of the changes required.
- At any point in time, a technical committee may decide that a research idea will not be considered for funding. In those cases, a PRCI staff member will set the funding status to 'Not on Funding Tool'. Ideas in this state can be reconsidered for funding if the sponsor asks for reconsideration and the technical committee agrees that it should now be considered for funding.
- Ideas that are actively on PRCI's research roadmap² for funding consideration will have a funding status of 'Submitted for Review'.
- Once the idea is suitably refined, the technical committee will determine where the idea best fits on the technical committee's research roadmap through a prioritization exercise. Each technical committee makes a 5-year plan of the research to be considered for funding and the funding year is changed to reflect the best estimate of when a research idea will be

² A research concept cannot exist on a research roadmap without having a corresponding research idea submitted to PRCI's website.

considered for funding. Note that the funding year may change from time to time as the priorities of the technical committee may change.

Funding a Research Idea³

Once a research idea that is in the ‘Submitted for Review’ status is in the current funding year and the idea has been fully developed, the idea sponsor requests that it is submitted for funding consideration. The idea will undergo a final review by the PRCI Program Manager and then will be placed on PRCI’s funding portal. PRCI members will be notified that a new research idea has been submitted for funding. Members that support the research idea vote funds they control to the idea. When the project is funded to at least 75%, it undergoes a review by PRCI’s Research Steering Committee to assess if the idea should proceed. If the RSC approves of the idea, it becomes a funded project when the idea achieves pledges for 100% of the funding and pledges for all the in-kind contributions are received. Each member that pledged funds to the project has the option to be a voting member on a project team that is responsible for the review and oversight of the execution of the corresponding project.

³ The funding method described here is the method used for most research projects. PRCI has another method where ideas that are determined to be part of a strategic research priority (SRP) are funded. While the specific processes are significantly different for SRP related ideas, the timing of when an idea is funded and that funds are provided amongst the PRCI members is the same for both types of ideas.

Appendix A – Research Idea Example

Below is a composite example of a research idea as submitted and a review of most sections to identify revisions that should be made to make it a better formatted idea. The intent is to provide guidance the style and content desired for each section. For most of the sections, review comments are added (in the format of [Review: ...]) with suggested revisions that would improve the submittal.

Pipeline Research Council International, Inc. (PRCI)

The Assessment and Development of Best Practices and Procedures for the Management of Geohazard Strain

[Review: the title is too long, As the title of a project commonly becomes the title of the corresponding report and the report title has a limited length, a better title would be: *Assessment-Management of Geohazard Strain.*]

1. Ballot Idea Info

Ballot Idea ID:	3267	Ballot Year	2021
Technical Committee:	Design, Materials and Construction	Research area:	DMC: Geohazard Management
Applicability of Research:	Both	Deadline for Editing:	09/30/2021, 5:00 PM central time
Date Submitted:	04/20/2021, 5:00 PM central time	DOT Project ?	Yes

2. Research Objective Alignment

The Executive Assembly established the following Research Objectives (ROs) as guidelines for project development. The ROs are the core research goals for PRCI and are the drivers for the majority of our research portfolio. These are the items that PRCI has identified as key to enhancing energy pipeline system safety, efficiency, and integrity. New projects should target one or more ROs.

RESEARCH OBJECTIVE ALIGNMENT	
6.	Develop, demonstrate and validate intrusion monitoring and surveillance technologies to enhance detection of third-party activities, ground movement and interferences potentially affecting pipeline infrastructure.

3. Benefits of Proposed Research

This project targets a broad need for guidance that could then be adopted into an industry-recommended practice by API. This was submitted to PHMSA for a 50/50 joint funding, but will also include funding from INGAA and support from API to adopt the recommended practice upon completion of the research.

This is completed in parallel with Research Idea ID: 3152

[Review: The first sentence is good but could contain more detail/specifics on what type of guidance will be provided. The balance of the content is background information and should be moved to the TC Leadership & Sponsor Notes section. It also duplicates information found in the Research Objectives & Linkage to Other Work section which should be eliminated. Better written as:

This project targets a broad need for guidance that could then be adopted into an industry-recommended practice by API and focuses on pipeline design aspects.]

4. Outcome of Proposed Research

This work package covers the strain capacity and strain-based assessment (SBA) framework for the integrity assessment of pipelines subjected to geohazards. The focus will first be high-level processes and procedures, including necessary preparation and data collection for the application of SBA. Relevant tools, their applicability and limitations, and relevant to various geohazards conditions will be explained when such tools are available and validated for use.

[Review: This is good content. Note that it describes information that can be expected to be used/gained upon the completion of the research.]

5. Research Objectives & Linkage to Other Work

This is completed in parallel with Research Idea ID: 3152 See attached documents for additional reference material.

[Review: This is good content but could be enhanced if the title to the research idea was also included. For example:

This work is intended to be completed in parallel with Idea 3152, Recommended Practices for Post-Construction Geohazard Management. The documents attached to this idea contain additional reference material.]

6. Technology Transfer Opportunities

Recommended practice developed based on this project and WP2 project would likely be used to engage API to adopt recommended practices for broad publications.

[Review: Better written as:

In addition to presentations to PRCI members, a recommended practice would be developed based on this project and the related project proposed under idea 3152. It is recommended that this is coordinated with API to adopt recommended practices for broad publications.

It is also expected that papers will be written to be presented at public pipeline conferences.

Note that the elimination of a generic reference (WP2) avoids confusion by eliminating jargon. The last sentence is extracted from the content originally posted in the Specific Project Results Targeted section.]

7. Specific Project Results Targeted

****SEE ATTACHED DOCUMENTS FOR ADDITIONAL DETAIL****

1. Kick-off Team meeting to solicit additional input and modify the research program, if necessary. **Results due to DOT within three (3) months of the effective date of the Agreement.**
2. Quarterly team review meetings. Results due to DOT within 6, 9, 12, 15, 18, 21, 24, 27, 30, and 33 months of the effective date of the Agreement
3. Final project team meetings. Results due to DOT within 36 months of the effective date of the Agreement
4. Attend and make presentation at DOT peer review meetings. Results due to DOT within 12, 24, and 36 months of the effective date of the Agreement
5. Publish papers and make presentations at public pipeline-related conference. Results due to DOT within 36 months of the effective date of the Agreement
6. Monthly status updates. Results due to DOT within 1, 2, 4, 5, 7, 8, 10, 11, 13, 14, 16, 17, 19, 20, 22, 23, 25, 26, 28, 29, 31, 32, 34, and 35 months of the effective date of the Agreement
7. Quarterly status reports. Results due to DOT within 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, and 33 months of the effective date of the Agreement
8. Final report. Results due to DOT within 36 months of the effective date of the Agreement
9. **Detailed plan for validation of tensile strain capacity within 6 months of the effective date of the Agreement**
10. **Summary of tensile strain capacity validation tests within 27 months of the effective date of the Agreement**
11. **Summary of available procedures and tools for estimating tensile strain capacity of nominally defect-free pipes due within 30 months of the effective date of the Agreement**
12. **Summary of available procedures and tools for estimating tensile strain capacity of pipes with anomalies due within 30 months of the effective date of the Agreement**
13. **Summary of available procedures for estimating compressive strain capacity of nominally defect-free pipes due within 24 months of the effective date of the Agreement**
14. **Summary of available procedures for estimating compressive strain capacity of pipes with anomalies due within 24 months of the effective date of the Agreement**

15. Tool and guidance document for total strain estimation. Results due to DOT within thirty-three (33) months of the effective date of Agreement (WP 1 Idea #3152 Deliverable - done in parallel to this project)

16. Guidance on geohazards management using strain-based assessment due within 33 month (Also part of WP 1 Idea #3152 Deliverable - done in parallel to this project)

[Review: These are not all specific targeted results; many are project execution tasks. Rewritten more concisely as:

Develop:

- *A detailed plan for validation of tensile strain capacity.*
- *A summary of tensile strain capacity validation tests.*
- *A summary of available procedures and tools for estimating tensile strain capacity of nominally defect-free pipes.*
- *A summary of available procedures and tools for estimating tensile strain capacity of pipes with anomalies.*
- *A summary of available procedures for estimating compressive strain capacity of nominally defect-free pipes.*
- *A summary of available procedures for estimating compressive strain capacity of pipes with anomalies.*
- *A tool and guidance document for total strain estimation.*
- *Guidance on geohazards management using strain-based assessment.*

The documents attached to this idea contain additional details.]

8. Scope of Work

Task 2.1 TSC – Procedures and Tools for Pipelines of Various Vintage

The TSC of a pipeline is often controlled by the TSC of its girth welds. Field girth welding and inspection have evolved over many decades. At the same time, the metallurgical and mechanical properties of linepipes, which can affect girth weld properties, have also evolved. For pipelines built from 1940's in North America, girth welds can be broadly divided into three groups for purpose of TSC determination.

Task 2.2 TSC – Pipe Segment with Anomalies

The TSC with anomalies in pipe body was investigated under a PHMSA-funded and a PRCI funded project. No work was done on possible impact of corrosion coinciding with girth welds. Within this project, the existing work will be summarized and guidance provided to make use of the existing work. Limited analysis will be conducted to investigate the impact of corrosion at other more critical locations, such as welds.

Due to the limited scope and budget, general-use tools are not expected from this task.

The validation will focus on two types of girth welds: (1) vintage (manual) girth welds made before approximately 1970 and (2) modern manual girth welds typical of either mainline welds or tie-in welds. In the case of vintage welds, flaws beyond workmanship acceptance limits are possible. Curved wide plate tests will be conducted with the two types of welds, approximately 6 tests per type. The test specimens will be designed through well-proven procedure developed by CRES in its work for PHMSA, PRCI, and other pipeline operators.

The outcome of the tests will be used to support Tasks 2.1 and 2.6.

Task 2.4 CSC – Load-Controlled and Displacement-Controlled Loading

PHMSA previously supported a comprehensive project aimed at developed CSC under loadcontrolled conditions. The CSC under displacement-controlled conditions is more relevant to the management of geohazards. However, there is no readily available models for such CSC. Thefocus of this task will be the CSC under displacement-controlled conditions. Sample analysis will be conducted to demonstrate the determination of CSC and use of such CSC in geohazards management.

The prior work on CSC under load-controlled conditions will be summarized. The CSC under displacement-controlled loading will be limited to the demonstration of procedures, but not providing general-use tools due to limited scope and budget.

Task 2.5 CSC – Pipe Segment with Anomalies

PHMSA previously funded work on CSC with dents and corrosion. Further analysis beyond those covered in the PHMSA project will be performed to extend the limits of prior work. A summary of processes to use the prior and new work will be provided.

[Review: verbose and at the same time unclear. Rewritten as:

Previously completed work will be reviewed to develop tensile strain capacity limits for pipelines including strain concentration at the girth welds including high-low misalignment, weld reinforcement, changes in wall thickness, welding imperfections, and weld mechanical properties. Compressive strain capacity limits will also be reviewed. This work will then be used to develop processes and procedures to develop a strain-based assessment framework for integrity assessment of pipelines subjected to geohazards. This will include the necessary preparation and data collection necessary for the application of strain-based assessment. The assessment will evaluate pipelines of various vintages with and without anomalies.

Validation will be performed focusing on two types of girth welds: (1) vintage (manual) girth welds made before approximately 1970 and (2) modern manual girth welds typical of either mainline welds or tie-in welds. In the case of vintage welds, flaws beyond workmanship acceptance limits are possible. Curved wide plate tests will be conducted with the two types of welds, approximately 6 tests per

type. The test specimens will be designed through a well-proven procedure developed by CRES in its work for PHMSA, PRCI, and other pipeline operators.

A sample analysis will be conducted to demonstrate the determination of compressive strain capacity for load-controlled and displacement-controlled loading and prior work will be summarized. A summary of the processes of using compressive strain capacity for pipe with dents and corrosion.]

9. TC Leadership & Sponsor Notes

This idea will only be funded as a PRCI project if the corresponding PHMSA proposal is selected for funding.

[Review: rewritten to incorporate recommended changes from above as:

This idea was submitted to PHMSA for a 50/50 joint funding but will also include funding from INGAA and support from API to adopt the recommended practice upon completion of the research. This idea will only be funded as a PRCI project if the corresponding PHMSA proposal is selected for funding.]

10. Contact Information

CONTACT INFORMATION			
	Name	Phone	Email
Submitter	Mike Hill	US(+1)(780) 420-8548	mike.hill@enbridge.com
Project Sponsor /Champion	Mike Hill	US(+1)(780) 420-8548	mike.hill@enbridge.com
Technical Contact(s)	Yong-Yi Wang	+1 6143760765	ywang@CRES-americas.com

11. Timeline and Funding

Timeline Expected: 48 months

Expected Start Date: 09/30/2021

Timeline Notes

Project Timeline is only 36 months but the funding below assumes contracting by 4th Quarter 2021.

Ballot Funding

PM Cost(%): 18%

No	TDC Utilization? (Checking this will automatically allocate 7% of subscriptions funds to the TDC)			
Requested PRCI Funding for Upcoming Ballot Year(s)				
YEAR	Requested Funding	PM Cost	Total	
0	\$5,230.00	\$2,741.40	\$17,971.40	
1	\$208,730.00	\$37,571.40	\$246,301.40	
2	\$187,030.00	\$33,665.40	\$220,695.40	
3	\$71,930.00	\$12,947.40	\$84,877.40	
TOTAL	\$482,920.00	\$86,925.60	\$569,845.60	

Cofunding

Firm Cofunding Amount: 482920 Cofunding
Source(s):

PHMSA 50/50 Cofunding above is for contractor portion only - See Attachment #3 for total and PHMSA co funding for entire combined project which also includes idea #3152 INGAA Cofunding - Approximately \$500k for both WP1 & WP2 (EXACT AMOUNT STILL TO BE DETERMINED)

12. In-Kind & Member Support

In-Kind & Member Support		
	Access To Pipeline Row	
	Data	
	Pipe Samples	
	Pipeline Digs	
	Runs of Specialized Equipment	
	Use of Repair Procedures	
	Other	

Member Time Commitment (Level): Medium Member

Time Commitment (hours):

Project Complexity: Moderate

13. Attached Documents

Proposal draft OR Detailed Execution Plan:

PHMSA GHZ Proposal Docs Submitted.zip

Optional Documents:

Notes

Zip file includes the full proposal submitted for joint funding with PHMSA. It also includes WP scope and funding (Idea #3152)