

Technical Reviewers' Rating Summary

Proposal Number	G-55-04	Application Title	iPIPE 2.0	Submitted By
EERC	Request For	\$400,000.00	Total Project Costs	
				\$1,450,000.00

Section A. Scoring

Statement	Weighting Factor	G-55-04A	G-55-04B	G-55-04C	Average Weighted Score
1. Objectives	9	4	4	5	36
2. Achievability	7	3	4	4	21
3. Methodology	8	3	4	5	32
4. Contribution	8	4	5	5	32
5. Awareness / Background	5	4	5	4	20
6. Project Management	3	3	4	4	9
7. Equipment / Facilities	2	3	3	5	6
8. Value / Industry - Budget	4	5	4	5	16
9. Financial Match - Budget	4	5	5	5	20
Average Weighted Score		188	215	235	212
	Total: 50				250 possible points

OVERALL RECOMMENDATION

FUND	X	X	X
FUNDING TO BE CONSIDERED			
DO NOT FUND			

Section B. Ratings and Comments

- The objectives or goals of the proposed project with respect to clarity and consistency with North Dakota Industrial Commission/Oil and Gas Research Council goals are:

The EERC has set out very clear objectives for the iPIPE 2.0 project, as a continuation of the initial and successful iPIPE project. This project will continue and expand on the evaluation and implementation of new and previously evaluated technologies to improve leak detection abilities, with the goal of reaching Governor Burgum's target of no spills in North Dakota, and elsewhere.

- Reviewer: G-55-04A
- Rating: 4

The objectives of iPIPE 2.0 are very consistent with many of the OGRP goals and purposes. The proposal objectives align particularly well with the following stated goals: •Promote efficient, economic, and environmentally sound exploration, development, and use of North Dakota's oil and gas resources. •Encourage, and promote the use of new technologies and ideas that will have a positive economic and environmental impact on oil and gas exploration, development, and production in North Dakota. •Improve the overall suitability of the oil and gas energy industry in North Dakota through the development of new environmental practices

that will help to reduce the footprint of oil and gas activities •Develop baseline information that will lead to other projects, processes, ideas, and activities.

- Reviewer: G-55-04B

- Rating: 4

The objective of the proposed activity is to advance technologies that reduce the frequency and duration of pipeline releases. Reductions in spills from pipeline applications in the oil and gas industry has been identified as a key challenge to the industry and the OGRP.

- Reviewer: G-55-04C

- Rating: 5

2. With the approach suggested and time and budget available, the objectives are:

The iPIPE 2.0 project has already set the groundwork in place with the initial iPIPE project, so they should be able to hit the ground running. The addition of two new members to the group, and with continued marketing of their successes, they will likely attract more partners, further enhancing the outside financing and access to viable testing areas. In kind support from potential technologies, they evaluate for effectiveness, will also assist in project cost.

- Reviewer: G-55-04A

- Rating: 3

The proposed approach, timeline, and budget all appear reasonable to accomplish the stated objectives. With the apparent success of iPIPE 1.0, I have no reason at this time to believe the program will struggle to meet the objectives. Given that this application is largely a continuation of an existing program currently funded by the OGRP, it can be reasonably assumed that a number of program efficiencies will carry over into the next phase.

- Reviewer: G-55-04B

- Rating: 4

The track record of the program during the first phase indicates that the probability of success in this phase is very high.

- Reviewer: G-55-04C

- Rating: 4

3. The quality of the methodology displayed in the proposal is:

The quality of their methodology is only average in the sense that the EERC has set the path and standard for the industry, in the area of improving leak detection. The initial iPIPE program is a great success and lauded throughout the industry. It is likely they will raise the bar even further, with the IPIPE 2.0 project, but even average has proven to be great.

- Reviewer: G-55-04A

- Rating: 3

The EERC outlined a number of key study areas in their methodology. I saw no major omissions and have no concerns with the methodology as proposed. The team outlined in application should be capable of existing on the key hydrogen roadmap details outlined in the methodology.

- Reviewer: G-55-04B

- Rating: 4

The success noted in phase one in moving new ideas thru to commercial application demonstrates that the methodology developed can be successful in achieving the stated goals.

- Reviewer: G-55-04C

- Rating: 5

4. The scientific and/or technical contribution of the proposed work to specifically address North Dakota Industrial Commission/Oil and Gas Research Council goals will likely be:

The iPIPE 2.0 project will help build on the previous iPIPE project, to reach the goals set by Governor Burgum, of eventually having no leaks, through an effective pipeline evaluation and inspection process in place. Improving leak detection implemented by the EERC, through iPIPE and iPIPE 2.0, as the industry moves toward no leaks, will minimize the volume and areal extent of any leaks. The leak detection technologies will mesh well with the existing North Dakota push for using drones.

- Reviewer: G-55-04A

- Rating: 4

The unique program methodology developed by the iPIPE members appears to be an industry leading effort with I believe good track record of success. The high level of private sector program participation appears to bode very well for yielding meaningful results. The EERC's extensive experience with research program management and onsite world-class facilities certainly great value towards the program success.

- Reviewer: G-55-04B

- Rating: 5

The Governor of ND has stated that he would like to see zero leaks from oil and gas pipelines by 2030. This program is a key activity that is being taken by a consortium of industry players actively involved in pipelines in ND together with technology providers to work on meeting this challenge as identified by governor .Burgum.

- Reviewer: G-55-04C

- Rating: 5

5. The background of the principal investigator and the awareness of current research activity and published literature as evidenced by literature referenced and its interpretation and by the reference to unpublished research related to the proposal is:

The lead investigator has an extensive history as an advocate and researcher, for the oil and gas industry of North Dakota, and has worked in several sectors of the oil and gas industry within the state, as well as working for the EERC. Supporting the lead investigator will be a host of fellow researchers within the EERC with prior experience on the iPIPE project and other areas of the North Dakota oil and gas industry.

- Reviewer: G-55-04A

- Rating: 4

Given the success of original iPIPE program, it can be reasonably assumed that the team at the EERC are the best fit for the continuation of the outlined work.

- Reviewer: G-55-04B

- Rating: 5

The program structure includes a voting member from each of the companies supporting this activity as well as the technical staff from the EERC which results in a team that is well versed in current activities including unpublished work in this area. In addition the technology providers bring much unpublished data on pipeline performance that allows this activity to access a wealth of information necessary to achieve the projects goals.

- Reviewer: G-55-04C

- Rating: 4

6. The project management plan, including a well-defined milestone chart, schedule, financial plan, and plan for communications among the investigators and subcontractors, if any, is:

The EERC has a long history of working with the ND OGRP and is very familiar and experienced at maintaining excellent communication, effective planning, scheduling, budgeting, and reporting on project progress. As essentially an extension of the initial iPIPE project, the template is already in place.

- Reviewer: G-55-04A

- Rating: 3

The proposed schedule and financial outline appear very appropriate for continuation of the iPIPE program. There appears to be no reason to be concerned about the applicant's management plan. I suggest using the original iPIPE program as a success guide as it relates to timelines, budgets, and NDIC/OGRP communication.

- Reviewer: G-55-04B

- Rating: 4

The project management plan is well defined and includes regular meeting with all sponsors to review progress. In addition, regular written reports will document progress on the technologies moving toward commercial application.

- Reviewer: G-55-04C

- Rating: 4

7. The proposed purchase of equipment and the facilities available is:

Equipment purchases for the project appear to be limited. Partners will provide the majority of testing sites and pipelines, while technology vendors, seeking approval from the iPIPE 2.0 group, will be supplying their equipment for testing, and potentially as in-kind support. Much of the required management office equipment requirements likely already exist within the partners and EERC facilities or are likely part of the previous iPIPE program.

- Reviewer: G-55-04A

- Rating: 3

While routine expendables are included in the budget, no specific equipment is outlined for purchase in the application. The facilities and resources available through the EERC to perform the outlined scope of work are more than sufficient.

- Reviewer: G-55-04B

- Rating: 3

No equipment is purchased in this program.

- Reviewer: G-55-04C

- Rating: 5

8. The proposed budget "value" relative to the outlined work and the commitment from other sources is of:

The low overall cost of the iPIPE 2.0 project, and the relatively limited request of ND OGRP funds, versus the huge potential to reduce spills and the resulting financial and environmental cost savings, makes this a very good project. It will no doubt further benefit from being a continuation of a preceding and successful initial iPIPE project.

- Reviewer: G-55-04A

- Rating: 5

With the high level of industry participation and support, it appears that the state and industry will receive very good value for the funds expended. Past experiences with the original iPIPE program appear to have been of very high value for many stakeholders and I no reason to believe that the next phase will not yield similar results.

- Reviewer: G-55-04B

- Rating: 4

The cash requirement of this program is \$1,450,000. The request to the OGRP is for \$400,000 or ~27%. In addition, there will be in-kind contributions that are not yet determined from participants resulting in additional value to the program. This represents excellent "value" for the state's investment.

- Reviewer: G-55-04C
- Rating: 5

9. The “financial commitment”² from other sources in terms of “match funding” have been identified:

The requested ND OGRP funding is significantly lower than the maximum 50% limit set by the ND OGRP guidelines and doesn't include all potential in-kind contributions from technology contributors and industry partners. Acquisition of additional industry partners will further enhance the financial commitment value.

- Reviewer: G-55-04A
- Rating: 5

The iPIPE application has a much higher level of financial commitment than the minimum requirement (~2.6:1 match). Significant additional value is provided by the industry partners that have committed to the program.

- Reviewer: G-55-04B
- Rating: 5

The program currently has 7 members for a total of \$1,050,000 in funds committed. The team is committed to continue to solicit additional partners which if successful will add to the available resources. In addition, they expect many of the technology developers to include in-kind resources as they work to commercialize their technologies. The identified commitments already exceed what is required and the team expects to enhance the cost share in the program with additional industry commitments.

- Reviewer: G-55-04C
- Rating: 5

1 “value” – The value of the projected work and technical outcome for the budgeted amount of the project, based on your estimate of what the work might cost in research settings with which you are familiar. A commitment of support from industry partners equates to a higher value.

2 “financial commitment” from other sources – A minimum of 50% of the total project must come from other sources to meet the program guidelines. Support less than 50% from Industrial Commission sources should be evaluated as favorable to the application; industry partnerships equates to increased favorability.

General Comments

This project is well worth funding by the ND OGRP. It has the potential to put North Dakota, and its oil and gas producers and service vendors, particularly in areas like drone surveillance of pipeline and associated facilities, directly in the forefront of the spill prevention technology, and in the spotlight of the entire country and world. The complementary aspects of this project, with other new and emerging technologies are undeniable, and likely to help create business opportunities within North Dakota.

- Reviewer: G-55-04A

The general public has very little tolerance for incidents in the pipeline industry, making it a top priority to keep striving for ways to improve on the safe operation of these critical infrastructure systems. Given the success of the original iPIPE program, I recommend proceeding with funding the grant application as an important step to keeping North Dakota a leader in safe pipeline operation and monitoring. The industry support, testing, feedback, and verification offered to

technology providers is simply not available outside of iPIPE. A continuation of the program is highly likely to continue yielding very positive results towards meeting several of the objectives of the OGRP.

- Reviewer: G-55-04B

This project is focused on addressing a major challenge for the ND oil and gas industry which is the public's concerns for pipeline safety. Governor Burgum has challenged the industry to achieve zero leaks from pipelines by 2030. The first phase of this activity has had good success in moving forward with new technologies to address this challenge. Progress has been made but the challenge remains. This project will help the state in moving toward that goal. I strongly recommend this activity for funding.

- Reviewer: G-55-04C