

# Technical Reviewers' Rating Summary

Proposal Number **G-54-01** Application Title **Hydrogen Energy Development** Submitted By  
**EERC** Request For **\$500,000.00** Total Project Costs  
**\$500,000.00**

## Section A. Scoring

Statement	Weighting Factor	G-54-01A	G-54-01B	G-54-01C	Average Weighted Score
1. Objectives	9	3	4	4	27
2. Achievability	7	5	4	5	28
3. Methodology	8	3	4	5	32
4. Contribution	8	3	5	4	32
5. Awareness / Background	5	5	5	4	20
6. Project Management	3	3	3	3	9
7. Equipment / Facilities	2	5	3	5	8
8. Value / Industry - Budget	4	2	3	4	12
9. Financial Match - Budget	4	1	3	2	8
<b>Average Weighted Score</b>		<b>166</b>	<b>200</b>	<b>206</b>	<b>190</b>
	Total: 50				<b>250 possible points</b>

## 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 objectives and goals were appropriately outlined with respect to OGRC standards and goals, however some ambiguity exists as to the depth of these goals and how they might be satisfied and measured in the "standards of success" section of the application. It may be more appropriate and helpful to outline more specific sources of data that will be utilized to achieve each investigative point. These points may then be referenced in the final study to accurately measure standards of success and insure that all available sources of information are fairly included.

- Reviewer: G-54-01A  
 - Rating: 3

The objectives of the hydrogen energy development application 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. •Maximize the market potential for oil, natural gas, and the associated byproducts produced therewith  
•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-54-01B

- Rating: 4

The goals and objectives of the proposed project are consistent with that of the NDIC/OGRC and the enabling legislation noted for this funding.

- Reviewer: G-54-01C

- Rating: 4

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

The technical staff at EERC have extensive experience at conducting high quality studies and have a wide array of contacts in both industrial and the academic communities. With the suggested approach, time and budget appear to be more than adequate to achieve the study's goals.

- Reviewer: G-54-01A

- Rating: 5

The proposed approach, timeline, and budget all appear reasonable to accomplish the stated objectives. I have no reason at this time to believe the outlined tasks will exceed the proposed timeline. The OGRP has extensive history with the EERC team and I would suggest looking at past funded projects to determine the past record of success.

- Reviewer: G-54-01B

- Rating: 4

The proposer has laid out a plan, time line and budget that should result in the products outlined in the proposal.

- Reviewer: G-54-01C

- Rating: 5

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

While the methodology on a broad base is very well explained, there is some lack of detail as to what specific sources (public or private) will be utilized to conduct a review of a hydrogen economy in the state of North Dakota. These sources, of which some may not be disclosable would ensure that all sources of information are fairly included and weighted in the conclusions of the study.

- Reviewer: G-54-01A

- 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-54-01B

- Rating: 4

The EERC has considerable experience in this area and has performed similar studies so I'm confident the methodology outlined will be successful in this study.

- Reviewer: G-54-01C
- 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 contributions of the proposed work are somewhat cursory in nature and while they are certainly in line with the OGRC goals, the product may not be significantly impactful given the lack of detailed sources of information that were disclosed in the application.

Furthermore, from review of the application, any actionable work resulting from the study might need more specific additional technical investigation.

- Reviewer: G-54-01A
- Rating: 3

If North Dakota is to continue as a dominant energy producer, hydrogen production will need to be part of the energy portfolio moving forward. The opportunities surrounding hydrogen production and utilization are vast and can be difficult to navigate for policy makers, regulators, and industry. The information gained from the hydrogen roadmap could go a long way in expanding our knowledge base and help all interested parties focus resources in the most productive areas at the proper time.

- Reviewer: G-54-01B
- Rating: 5

The changing expectation of energy markets will affect the ND oil and gas industry. This study will provide a road map for new opportunities for this industry group in ND.

- Reviewer: G-54-01C
- Rating: 4

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 background of the principal investigator as well as their awareness and interpretation of published and unpublished literature is of very high quality. EERC has a proven track record of investigative research, having participated and succeeded in many similar proposed studies.

- Reviewer: G-54-01A
- Rating: 5

The PI and team at the EERC are an exceptional fit for the work outlined in the proposal. While one could argue that there may be equally suited expertise available on a national level, the fact that this is focused on North Dakota's energy industry make the EERC team the hands down winner and best suited for a high-quality end product.

- Reviewer: G-54-01B
- Rating: 5

Team assembled are well suited the to proposed work. They appear well versed in current work in this area.

- Reviewer: G-54-01C
- 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 proposal for the study includes a definition of time and budget needed to complete the study but does not include a clear milestone chart or list of communications to be achieved

with specific sources (industry or academic). These would be helpful.

- Reviewer: G-54-01A

- Rating: 3

The proposed schedule and financial outline appear appropriate for the proposed work. At this time, I have no reason to be concerned and would again rely on the Council's past projects with the PI and EERC as indicator for past success related to timelines, budgets, and communication.

- Reviewer: G-54-01B

- Rating: 3

The plan noted should work. I would think that an advisory group to offer suggestions/ insights from industry and Government made be able to help the EERC in successfully completing this activity and could be considered.

- Reviewer: G-54-01C

- Rating: 3

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

The proposed purchase of equipment is rather minimal and very much justified for the scope of the proposed study project.

- Reviewer: G-54-01A

- Rating: 5

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

- Reviewer: G-54-01B

- Rating: 3

No equipment was noted.

- Reviewer: G-54-01C

- Rating: 5

8. The proposed budget "value"1 relative to the outlined work and the commitment from other sources is of:

The proposed budget line "value 1" is of mixed value overall. With respect to the skill of the staff involved in the proposed study the value is very good, however a very large part of the budget is reserved for administrative purposes, which does not contribute to the furtherance of success within the scope of this project. It is of the reviewer's opinion that administrative budget items should not be included within the project scope.

- Reviewer: G-54-01A

- Rating: 2

Given the legislative directive and outline related to the application, no matching funds appear to be required. Related to the value, I believe that a comprehensive and well executed study will require near all of the funds outlined in Senate Bill 2014.

- Reviewer: G-54-01B

- Rating: 3

I believe this proposed work would add significant value to the state of ND and the Oil and Gas industry.

- Reviewer: G-54-01C

- Rating: 4

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

No matching funds have been identified within the proposal.

- Reviewer: G-54-01A

- Rating: 1

Not applicable as outlined in Senate Bill 2014. It may be of value to have the EERC explore matching contributions and partners (cash or in-kind) to potentially enhance the outcome of the work.

- Reviewer: G-54-01B

- Rating: 3

No matching funds were noted.

- Reviewer: G-54-01C

- Rating: 2

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

The goals and needs for investigative research regarding the formation of a hydrogen economy in the state of North Dakota are well justified. While more details as to what specific sources would be used to achieve these goals, they remain a point of necessary research. With the apparent shift of consumer preference away from fossil fuels, a study of possible alternatives that will benefit the local economy and state revenues will help guide the transition and use of resources while keeping North Dakota in the forefront of energy and resource production.

- Reviewer: G-54-01A

North Dakota’s potential as a hydrogen production leader is enormous and I recommend proceeding with funding the application as an important first step to fully understand the opportunities and challenges ahead. Countless questions exist today for all stakeholders on how to make meaningful forward progress in the hydrogen space. The legislative foresight to earmark funds for a hydrogen study lead by the EERC should greatly assist key stakeholders in better understanding how to position themselves for the increasing interest in hydrogen as an energy source. No direct study partners were outlined in the application. While it may very well organically occur throughout the course of study, collaboration/partnerships with existing industry participants would certainly enhance the final results.

- Reviewer: G-54-01B

The proposed work offers a road map for continued success for the ND Energy industry. The markets for energy are changing due to a number of forces and ND need to understand how the energy carrier can/ will offer opportunities for continued growth due to the numerous natural resources in the state.

- Reviewer: G-54-01C