

# TECHNICAL REVIEWERS' RATING SUMMARY

R001-I

## Feasibility Study of a Biomass Supply for the Spiritwood Industrial Park

Submitted by Great River Energy with 5 Other Co-applicants

Principal Investigators: Sandra Broekema

Request for \$109,000; Total Project Costs \$534,000

<u>Rating Category</u>	<u>Weighting Factor</u>	<u>Technical Reviewer</u>		<u>Average Weighted Score</u>
		<u>2</u>	<u>5</u>	
Objectives	9	4	5	40.50
Achievability	9	4	5	40.50
Methodology	7	3	3	21.00
Contribution	7	3	5	28.00
Awareness	5	3	1	10.00
Background	5	4	3	17.50
Project Management	2	3	3	6.00
Equipment Purchase	2	5	5	10.00
Facilities	2	5	5	10.00
Budget	2	4	4	8.00
<b>Average Weighted Score</b>		183	200	<b>191.50</b>
<b>Maximum Weighted Score</b>				<b>250.00</b>

### **OVERALL RECOMMENDATION**

Fund	X	X (verify cost share)
Funding May Be Considered		
Do Not Fund		

R001-I  
Feasibility Study of a Biomass Supply for the  
Spiritwood Industrial Park  
Submitted by Great River Energy with 5 Other Co-applicants  
Principal Investigators: Sandra Broekema  
Request for \$109,000; Total Project Costs \$534,000

- 1. The objectives or goals of the proposed project with respect to clarity and consistency with North Dakota Industrial Commission/Renewable Energy Council goals are: 1 – very unclear; 2 – unclear; 3 – clear; 4 – very clear; or 5 – exceptionally clear.**

Reviewer 2 (Rating: 4)

The project will evaluate 1) types of biomass, 2) delivered cost, 3) densification options, 4) prospects of perennial crop production, and 5) develop a budget and process schematic for using biomass. It is specified that they will use spreadsheet models and complete the project in one year.

Reviewer 5 (Rating: 5)

Objective: Complete a feasibility study to consider co-firing 10% biomass at Spiritwood Station.

- 2. With the approach suggested and time and budget available, the objectives are: 1 – not achievable; 2 – possibly achievable; 3 – likely achievable; 4 – most likely achievable; or 5 – certainly achievable.**

Reviewer 2 (Rating: 4)

The suggested process, time and budget appear to be reasonable estimates of the commitment required to achieve the objectives.

Reviewer 5 (Rating: 5)

A one-year time table is typical for this study.

- 3. The quality of the methodology displayed in the proposal is: 1 – well below average; 2 – below average; 3 – average; 4 – above average; or 5 – well above average.**

Reviewer 2 (Rating: 3)

The material presented in the methodology section is limited on specifics of how listed objectives will be achieved. Some of the overall project methodology is included in the background/qualifications section.

Reviewer 5 (Rating: 3)

The approach is sound. The PI will probably discover new ways to determine and find biomass resource information.

- 4. The scientific and/or technical contribution of the proposed work to specifically address North Dakota Industrial Commission/Renewable Energy Council goals will likely be: 1 – extremely small; 2 – small; 3 – significant; 4 – very significant; or 5 – extremely significant.**

Reviewer 2 (Rating: 3)

The project is beneficial in compiling and applying existing information, which will be beneficial, but little new scientific or technical contributions are expected.

Reviewer 5 (Rating: 5)

The project is well justified, and if put into practice could help develop biomass feed stock industry. There is a large amount of CRP land in the vicinity of the project!

- 5. The principal investigator's 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: 1 – very limited; 2 – limited; 3 – adequate; 4 – better than average; or 5 – exceptional.**

Reviewer 2 (Rating: 3)

An awareness is inferred in the background section, but no literature is cited.

Reviewer 5 (Rating: 1)

There are no references cited in the proposal. The PI may not be aware of existing biomass databases and reports, however there is no reason to question the PI ability to discover the information.

- 6. The background of the investigator(s) as related to the proposed work is: 1 – very limited; 2 – limited; 3 – adequate; 4 – better than average; or 5 – exceptional.**

Reviewer 2 (Rating: 4)

The background of Great River Energy and its partners brings expertise and experience important for this project.

Reviewer 5 (Rating: 3)

No information is provided regarding the PI's background. It is assumed consultants, GRE, and staff have adequate qualifications.

- 7. 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: 1 – very inadequate; 2 – inadequate; 3 – adequate; 4 – very good; or 5 – exceptionally good.**

Reviewer 2 (Rating: 3)

Parameters for determining success of the project are defined, but the proposal does not include a well defined process and milestones.

Reviewer 5 (Rating: 3)

The plan appears adequate. The plan seems to lack specific details.

- Typical sources of biomass – reference to previous studies done in ND for co-firing biomass at UND and the State Penitentiary.
- Approach for firing biomass in the boiler and references to studies funded by DOE regarding co-firing.

**8. The proposed purchase of equipment is: 1 – extremely poorly justified; 2 – poorly justified; 3 – justified; 4 – well justified; or 5 – extremely well justified. (Circle 5 if no equipment is to be purchased.)**

Reviewer 2 (Rating: 5 – if no equipment is to be purchased)

Equipment is not required.

Reviewer 5 (Rating: 5)

No equipment.

**9. The facilities and equipment available and to be purchased for the proposed research are: 1 – very inadequate; 2 – inadequate; 3 – adequate; 4 – notably good; or 5 – exceptionally good.**

Reviewer 2 (Rating: 5)

Facilities are minimal since the project is a study.

Reviewer 5 (Rating: 5)

**10. The proposed budget “value” relative to the outlined work and the financial commitment from other sources is of: 1 – very low value; 2 – low value; 3 – average value; 4 – high value; or 5 – very high value. (See below)**

Reviewer 2 (Rating: 4)

The project will provide important information for developing biomass utilization. The majority of the information developed needs to be shared for the work to benefit more than Great River Energy.

Reviewer 5 (Rating: 4)

Cash match appears significant. However no commitment letters are provided.

Financial commitment from other sources – A minimum of 50% of the total project must come from other sources to meet the program guidelines. Higher priority is to be given if the application has private industry investment equal to or at least 50% or more of total cost.

The minimum 50% cash match is demonstrated.

### **Section C. Overall Comments and Recommendations:**

**Please comment in a general way about the merits and flaws of the proposed project and make a recommendation whether or not to fund.**

#### **Reviewer 2 (Fund)**

I recommend that the project be funded.

The project is a piece of a multi-faceted project that is required to develop a biomass utilization enterprise. Even though there are weaknesses as described in the comments for each evaluation criteria, specifically the methodology for reaching the objectives, the foundation is there and I expect that Great River Energy would have the expertise to develop the methodology and complete the project if funded. It would have been helpful to know more specifics on the consultants who might assist on the project.

#### **Reviewer 5 (Fund – verify cost share!)**

A successful co-firing project in ND could very well jump start biomass energy crop-development and create value for agricultural residues.

This study is worth funding.

The PI should get familiar with earlier DOE co-firing studies and review literature published for DOE through the EERC which will provide methodologies for finding biomass resources and combustion data relative to co-firing of various fuels.