

# TECHNICAL REVIEWERS' RATING SUMMARY

R016-A

## Renewable Energy Commodity Trading Educational Program

North Dakota State University  
Principal Investigator: William W. Wilson  
Request for \$234,346; Total Project Costs \$468,692

<u>Rating Category</u>	<u>Weighting Factor</u>	<u>Technical Reviewer</u>			<u>Average Weighted Score</u>
		<u>1A</u>	<u>1B</u>	<u>1C</u>	
1. Objectives	9	4	5	3	36.00
2. Achievability	9	4	4	3	33.00
3. Methodology	7	5	5	5	35.00
4. Contribution	7	4	5	4	30.33
5. Awareness	5	4	5	4	21.67
6. Background	5	4	5	5	23.33
7. Project Management	2	5	5	4	9.33
8. Equipment Purchase	2	3	5	2	6.67
9. Facilities	2	4	5	3	8.00
10. Budget	2	4	5	4	8.67
<b>Average Weighted Score</b>		207	241	188	<b>212.00</b>
<b>Maximum Weighted Score</b>					<b>250.00</b>

### OVERALL RECOMMENDATION

FUND	X	X	X
FUNDING MAY BE CONSIDERED			
DO NOT FUND			

R016-A  
Renewable Energy Commodity Trading Educational Program  
Submitted by North Dakota State University  
Principal Investigators: William W. Wilson  
Request for \$234,346; Total Project Costs \$468,692

- 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 1A (Rating: 4)

I think this a great set of objectives and is focused on building in an area of the industry that is very short in numbers and educational points. This type of platform will have a huge impact on industry and mitigating risk.

Reviewer 1B (Rating: 5)

**Objective:** Develop a world class renewable energy commodity trading educational program targeted to students, feedstock suppliers, and industry personnel. The scope of this project includes biofuels, cellulosic feedstocks, wind and electrical energy.

The statement of objectives is clear enough, but the ability to actually accomplish this objective or not will be found in the details that follow.

Reviewer 1C (Rating:3)

I wish it would just say, there are two parts to this proposal:

- 1) Build a computer room with trading board to be used for the trading curriculum and for the Bison Fund and other uses.
- 2) Develop a curriculum for the trading educational program.

Most schools have a trading room, even if it isn't full of computers (some have trading boards and a nice collaborative space but no computers since most students have computers already). If the Bison Fund doesn't have a room like this as described in the proposal, than I agree that they may really like to share this room if it is convenient location for the students and staff involved in the Bison Fund (which I'm not sure is true).

Bottom line, I was wondering if they need this renewable energy trading program to get a computer lab built or if the computer lab needs to be built for the trading program. I believe the latter to be true, but I wish that the proposal would have better explained that the computer lab is absolutely essential to the trading program and provide reasons for why this is the case...especially since most students have computers, especially in grad student programs...is it for licensing the required software? Is this an undergrad or grad level course or both?

In an unrelated note, there is a mention of wind and electricity once or twice in the document but everything else (it seemed to me) was focused on feedstock procurement, biofuels, and new renewable energy, biomass or biofuel feedstocks. I'd like to hear more about how wind fits into the proposal. Is it strictly for RECs? Will there be electricity trading and futures? Since wind,

electricity trading, and RECs could be a core part of the program, I would have liked to have seen another sentence or two describing how it fits into this concept.

- 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 1A (Rating: 4)

The approach and time established appear to be adequate to reach the objectives. I think a slight increase in the budget is needed for coarse materials and research supplies. I think these are a bit shy, but not far off.

Reviewer 1B (Rating: 4)

This is an aggressive, visionary plan that will can be achieved if people of exceptional ability and proven productivity are working on it. William Wilson has had an exceptional career as an Agricultural Economist at NDSU and has proven his ability to successfully manage resources to accomplish these types of projects. A key issue will be his ability to work with other faculty and staff in the NDSU Agricultural Economics group to ensure that this program is supported within their Department and meshes with other ongoing teaching, research and extension activities. From speaking with other faculty at NDSU it appears that the Department overall is behind this effort. A lack of broad based departmental support would be the first place I would look to find a reason for this program to eventually not be successful.

Reviewer 1C (Rating: 3)

I'm a little concerned that since the curriculum still needs to be developed and there are so few people working on that piece that it may be difficult to be self-sustaining as a program within 2 years. I'm less concerned with the updates to the room. I'm sure given a few months and funding, the room refurbishment can occur.

- 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 1A (Rating: 5)

The approach presented in this proposal is not only well thought out, but both fills a void in the renewable energy sector and hits the objectives of the commission.

Reviewer 1B (Rating: 5)

In my view, the quality of the methodology to be employed in this program is very high, with a thorough, sequential and comprehensive plan in place to

1. Assess trade practices and curriculum demands
2. Develop relevant data sets
3. Develop draft curriculum
4. Develop models to measure risk and analyze risk management strategies

5. Develop logistics models of the renewable energy sector
6. Create simulation models and programs for teaching risk, strategy, and logistics management
7. Integrate the data, models and simulations into the Commodity Trading Room
8. Initially deliver educational programs

This plan recognizes data and information areas that currently are deficient in the economic analysis of the renewable energy sector in North Dakota and beyond, and works toward bolstering those areas (see items 1, 2, 4, and 5). With these areas of need addressed, the plan turns development of educational curriculum, educational environments and programs (see items 3, 6, 7, and 8).

Reviewer 1C (Rating: 5)

I believe this to be a very important program that will be very important globally. Education now will go a long way to make NDSU a world-renown center for renewable energy trading and risk reduction hedging.

My only suggestion is that the educational curriculum should probably be developed in more detail before embarking on the computer room updates. Buying computers that will be a year old before the curriculum really takes hold may be a waste. And buying all those computers for a single course was new-age for 1995. I question whether it is absolutely required now. It is just a question that should be asked since the costs necessary to refurbish the room, buy computers, and provide maintenance is substantial. Perhaps ipads or tablets + keyboards would be the way to go so they can be cleared out of the way for student collaboration when not needed.

- 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 1A (Rating: 4)

I think the technical aspect of this proposed work is top notch and right on track. I think that the scientific part will grow as this program would take off and function.

Reviewer 1B (Rating: 5)

To develop the renewable energy industry in North Dakota, it seems to me that there will need to be educational support at the university level as well as a supply of technically proficient and adequately trained professionals for the associated agribusiness industry. Not to employ over-zealous hyperbole, but where else would the NDIC/REC turn in-state to be able to perform these types of background research and associated educational activities than these agriculturally oriented and capable faculty at NDSU?

Reviewer 1C (Rating: 4)

Significant on the educational side. I can see students enrolling at NDSU specifically due to this program.

- 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 1A (Rating: 4)

This PI's background and experience looks to be a great backbone structure to build this program.

Reviewer 1B (Rating: 5)

In the state I work in, I have been heavily involved in a state and commodity commission project to assess the agronomic and economic feasibility of using cellulosic biomass (crop stover) in the production of bioenergy. This project involved the development of these farmer decision tools (in both spreadsheet and web-based forms) to help farmers determine whether to enter into crop stover-provision contracts with a cellulosic ethanol production firm. The particular firm involved was one of the five initial recipients of \$70 million grants from the U.S. Department of Energy to establish cellulosic ethanol production plants in the United States. As part of this effort, the team I was working with conducted an extensive literature review. I have also presented the information related to this particular project at a professional meeting (Agricultural and Applied Economics Annual meeting in 2010) an am familiar with similar educational efforts in other states.

I have also been involved in extensive applied research and educational activities associated with grain-based ethanol production, including evaluation of overall industry trends and the evaluation of the economic impact of ethanol plants on local economies. I am currently involved with a selected national CFARE (*Council on Food, Agricultural and Resource Economics*) project team to evaluate the effect of U.S. ethanol development on U.S. and World crop acreage and production and U.S. the U.S. livestock industry.

Reviewer 1C (Rating: 4)

It appears he has studied the Tulane trading room in good detail which is highly pertinent since this would also include a trading room. However, it would be nice to see collaborative work space comparisons to other schools even if comparing rooms with programs that are not trading programs. Basically, what is the best room design? Part of the point is to have a state-of-the-art room with the best educational reach and the Tulane trading room is just one example of this.

- 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 1A (Rating: 4)

The experience this PI brings seems to be in great alignment of industry knowledge and a fast depth of knowledge of various sectors.

Reviewer 1B (Rating: 5)

See comments to question #5 above.

Reviewer 1C (Rating: 5)

It appears he has good experience and interest in innovation to support NDSU and the commission's interests. His past experience will prove useful in the curriculum.

- 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 1A (Rating: 5)

The management plan is clearly written, the objectives are clear and the plans created directly feed to meeting those objective. The budgeting, partnerships, and leadership is defined and expectations are set for those involved.

Reviewer 1B (Rating: 5)

The project management plan in this proposal is sound, with of course the likelihood of its successful achievement resting on the Principal Investigator – William W. Wilson. Given his professional track record of achievement and the foundation of teaching, applied research and extension at NDSU, it seems that this project has a strong likelihood of being successful.

Reviewer 1C (Rating: 4)

The phases were very good. Some of the costs appear inconsistent since it appears they were developed at different times. I don't really understand the cost-sharing of the room and perhaps there could have been more detail there. Who else will be using the room and who else is participating in this process?

- 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 1A (Rating: 3)

After reviewing the objectives and methodology plans, I think it is clear to why the equipment is justified. Some more discussion could be added to what the equipment's value brings to the success of the project.

Reviewer 1B (Rating: 5)

If I were going to err in this project, I would err on the side of having more than enough equipment of high enough quality and capability to more than comfortably handle the number of students you hope to have involved in this program. A student learning environment needs to be "comfortable" and "accessible" in a college setting – with students requiring the ability to quickly integrate different sources of vital bioenergy feedstock supply, logistical, market demand and other sources of relevant information to learn how to function in a real world agri-energy business environment. The real world agri-energy market environment that new college

graduates will find themselves involved in will be dynamic and demanding at the same time. Hyper competitive business interests will provide profit enhancing information systems to these people to help them be effective, and this project plan seeks to emulate the real-world business environment these people will eventually find themselves in.

Reviewer 1C (Rating: 2)

I don't doubt that it may be very necessary to purchase all this equipment...but if you've been reading so far, I still wonder why? This is a design for a 1995 state-of-the-art room I saw, well, in 1995. Is this the best way to do it for 2012? Perhaps a smartboard is the best way to do it? Are ipads + keyboards the best way? Do most students have their own computers anyway? Could this be done in another lab? Is it better to have 5 computers with the licenses in the back of the room and a big collaborative space taking up most of the room + a lot of whiteboards? Are computers necessary to have the appropriate licenses?

I don't think the proposed budget is too much. I just think, what if you can forego the equipment (if it is redundant) and hire 1-2 more world-class instructors to really push the trading envelope? Perhaps ADM and Gaviion would have no problem with their funds being used in an alternative manner so long as it provides them better data.

**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 1A (Rating: 4)

No concerns.

Reviewer 1B (Rating: 5)

See comments in question #8 above.

Reviewer 1C (Rating: 3)

I'm sure it will all work fine.

**10. The proposed budget “value”<sup>1</sup> 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 1A (Rating: 4)

I think the budget overall is good. I would re-evaluate the costs associated with coarse materials and research; I think they are a bit low.

Reviewer 1B (Rating: 5)

Although this is a sizable amount of resources to expend (\$234,346 with all costs included), it appears to be a worthy expenditure to establish a high quality training program for new professionals to be involved in the renewable energy industry in North Dakota. It is important

that this program be complementary to other university-level educational opportunities in North Dakota to ensure that people coming out of it are of the highest quality and capability available. Accomplishing such programs in a university setting such as at NDSU isn't "cheap", but where else within the state is there available a base of rural, agribusiness-oriented students that will be as likely to see this type of educational program and future associated career employment possibilities in as positive a light?

Reviewer 1C (Rating: 4)

I do think this curriculum is very necessary for our energy future. I think it provides high value and there is an opportunity to really "blow the doors off". The financial commitment from ADM and Gavilon is very important. It is very good work by NDSU and the principal investigator to attract multiple industry interests to support this concept collaboratively.

<sup>1</sup> "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.

**10a. 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 1A (Fund)

After reading and reviewing the application for the Renewable Energy Commodity Trading Educational Program, I would strongly advocate this for development and funding. I feel this program achieves the objectives and goals of the North Dakota Renewable Energy Council. This project clearly fills a void in both the educational system and industry. This program will not only reap benefits for the state and companies that reside in North Dakota, but will have national impact that reflects back onto North Dakota. I think this a great approach and hope that it becomes a successful program.

Reviewer 1B (Fund)

Overall, I respond very positively to this proposal. The establishment of this type of Commodity Trading Room with associated educational programs (and supporting supplied research) is a proactive step – displaying leadership among U.S. land grant universities. As mentioned in the

proposal, similar energy-focused educational programs have been tried elsewhere (i.e., Tulane), so there are pre-existing models for physical set up and function as well as curriculum integration within a university setting to examine.

One element that I think needs to be acknowledged in this proposal and by the North Dakota Industrial Commission, the Renewable Energy Council, and the Renewable Energy Program is the need for “nimble flexibility” in this program as renewable energy information needs, logistical market issues, and renewable energy markets change in the current dynamic environment for U.S./Canadian/World energy markets and government policies. The focus of the types of information being emphasized at this time in this proposal for renewable energy education may change either slowly or rapidly or dramatically in the next few years.

In closing, if I were to add one element to this proposal it would be a disciplined system of annual internal and external program review, looking both internally as to what is occurring in development of the educational program resources and methods and externally as to what could be rapidly changing bioenergy information needs. Once in motion, this program should continue to be nimble and flexible in terms of the changing information needs of real world agri-bio-energy markets. If this element already exists in either an implicit or explicit manner, then it bears emphasis from the granting body that the program remain relevant via this process of periodic reexamination of information needs and program direction.

**Reviewer 1C (Fund )**

I have many comments above. Please review those. Overall, I really do believe this is an important program. My comments may seem critical but they are geared toward driving toward an innovative concept and not just having a “cool” program.

I do believe inviting other schools to compete like Tulane is an important idea. One difficulty NDSU will always have are the lack of flights to the area...there are more non-stops to New Orleans. This can be overcome with good marketing. I believe NDSU has good access to BBI, Biomass Magazine, and can represent themselves well at conferences to assist this effort.

I believe there are a lot of intangibles softly mentioned in the proposal that can make this program a big success. The industry involvement from ADM and Gaviolon are important. The access to online programs like Ag\*IDEA is important to push the program capabilities.

Plus, educational programs like this are malleable which is important when funding a project. The curriculum can change over time to better serve educational interests and the industry. There just needs to be a strong base to get the program going.

Overall, I hope there is a strong consideration to move this project forward.