



Renewable Energy Program

North Dakota Industrial Commission

Amendment

Project Title: Renewable Energy Commodity Trading Educational Program

Applicant: North Dakota State University

Principal Investigator:

Dr. William W Wilson

Application approved: July 16, 2012

Date of Proposal Amendment: **Aug 20, 2012**

Amount of Request for the amendment
\$265,654

Total Amount of Proposed Project: **\$1,000,000**

Duration of Project: **4 years**

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NA refers to as either not applicable and/or covered in original proposal

Renewable Energy Commodity Trading Educational Program: Amendment

ABSTRACT: The renewable energy industry has become very important to North Dakota's economy and the surrounding region. A major challenge to the sector is the amount of risk that firms are exposed to in terms of investments, as well as on-going business operations. Indeed, margins in the sector are extremely volatile, more so than other agricultural processing sectors. Margin volatility impacts not only firm risk, which stifles investment, but is also transmitted to feedstock suppliers, rural communities, and consumers. This project proposes to develop a world class commodity trading room that will be used for education programs on risk and risk management in the renewable energy sector.

Scope of Amendment: This proposal is an amendment of a proposal approved on July 16, 2012, and in which the REC recommended and encouraged an amendment. This proposal is intended as an amendment of the original proposal. The scope of the original proposal is expanded to include additional research and educational activities related to contracting in renewable energy and for feedstocks. This includes contracts between growers and processors as well as contracts between energy processors and end-users (consumers). The project duration is proposed to be extended by two years to a total of four years. The budget is expanded with corresponding match from private sector partners.

Duration: 4 years

Amount of Request for the amendment **\$265,654**

Participants: North Dakota State University, ADM, and Gavilon

Renewable Energy Commodity Trading Educational Program: Amendment

PROJECT DESCRIPTION

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.

Details of the previous proposal: These are not repeated here and are available separately.

Scope of the amendment: The original project is quite comprehensive, but, the scope and duration was limited for varying reasons. Since then, we have had very strong encouragement from the renewable energy sector, trade associations, colleagues and the REC. In all cases, concerns that the initiative be world class and sustainable were communicated. In addition, there is an important and emerging issue that was not explicitly addressed in the original proposal: contract strategies. The amendment extends the project to 4 years and expands the scope to include contracting strategies.

Contracting has traditionally been assumed to have little relevance in commodity marketing. In general, there has been an idea that one could buy an infinite amount of the commodity at any time, without having a perceptible influence on price. Similarly, assumptions are that one could sell product without impacting the market. However, over time, in agricultural and energy markets, contracting has become very important for a number of reasons. These include: the need for processors to coordinate inbound feedstocks, processing, logistics and forward sales; the prospective differentiation in feedstock ingredients, and that sellers (farmers) have demands for managing their risks.

Likewise, consumers (blenders) of biofuels have related concerns. The combination of these has resulted in an escalation in the use of contracting both for buying bioenergy feedstocks and for selling products and co-products.

Indeed, the importance of contracting has escalated in other agricultural sectors, for the very same reasons. Notable examples include malting barley, food grade soybeans, Vistive soybeans, specialty canola (Nexara) and sunflower varieties, in addition to the emergence of corn that yields greater ethanol. All of these are forerunners to what will likely be common practice in the renewable energy sectors. However, contracting is not without problems. Indeed, several firms have failed due to poor contract performance, some have experienced problems with farmer deliveries, and others have experienced strategic difficulties resulting from legal initiatives brought on by supply-chain partners. Other issues relate to contract formulae, matching sales with purchases, contract duration, how far forward contracts are made, margin calls, thinness in deferred months, credits for by-product values, specification of qualities, quantities, timing and other terms of trade. All of these will be problems and opportunities that the industry will have to confront in the coming years.¹

This amendment seeks to develop specific data and models that can be used to analyze contracting strategies. These include contracts between processors and

¹ These issues have been discussed in other studies. Examples include: Wilson and Dahl, *Grain contracting strategies: the case of durum wheat*, Summer 2011, Volume 27, Issue 3, Pages 261–398 and, William Wilson, Cole Gustafson, Bruce Dahl, (2009) "*Crop insurance in malting barley: a stochastic dominance analysis*", *Agricultural Finance Review*, Vol. 69 Iss: 1, pp.98 - 112

growers or suppliers, as well as between processors and end-users (blenders). Ultimately, these will be incorporated into the educational program (described previously).

Methodology: Focus of the work. These include:

1. ***Contacting Practice in feedstock (corn)-biofuels interface:*** A two-step process will be conducted for this purpose. One is to review other industries and studies to identify the common features and strategies used in contracting for grains and product sales. Based on this, a set of interviews of the bio-fuels sector will be conducted to identify common practices, problems and challenges related to contracting.
2. ***Develop analytical models that can be used to analyze contracting strategies:*** Based on the results from 1 above, we will develop data sets and analytical models that can be used to analyze contracting strategies. In concept, these are based on the Principal-Agent (PA) problem in economics where the principal (buyer) designs contracts and terms to provide incentives for acceptance (incentive compatibility) and performance. These will be extended to include risk which is critical in these industries.
3. ***Deliver educational programs (initial):*** The educational program will be expanded to include modules related to contracting. These will be included in both the NDSU course(s) as well as those presented in industry modules.

TIMETABLE

The proposed timetable, by activity including duration and start and end dates, are presented below. The activities are expected to begin in October, 2014, and last for two years.

Activity	Start	End	Duration	2014	2015				2016			
				Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
Step 1E. Contracting Interface	10/14	6/15	9 months	[Bar chart showing activity from Q4 2014 to Q3 2015]								
Step 2E. Develop Models	1/15	12/15	12 months	[Bar chart showing activity from Q1 2015 to Q4 2015]								
Step 3E. Deliver Educational Programs	8/14	9/16	14 months	[Bar chart showing activity from Q4 2014 to Q3 2016]								

BUDGET

Total salary and benefits for the amendment covered under the REC grant are budgeted at \$158,454. This includes salary for research scientists/lecturers at an annual rate of \$57,819 in year 3 and a 3% annual escalator. Fringe benefits accruing at a rate of 35% total \$41,081.

The cost of printing course materials and software manuals is budgeted at \$1,950.

Research supplies (renewable energy data/information services) to develop the course are budgeted at \$13,000.

Information technology fees are budgeted at \$45,513 for technical support; \$1,276 for network maintenance; \$1,119 for classroom maintenance; and \$87,594 for data/software licensing fees.

Indirect Costs calculated at the institutional rate of 53.2% total \$92,250. Program income generated by industry course fees will be used to support ongoing costs of the Commodity Trading Room.

Matching funds of \$500,000 are provided in the form of private industry match.

ADM and Gavilon have each given \$250,000 in support of the Commodity Trading Room, see the distribution of expenses below and letters of support are also attached.

The project budget is shown below for the amendment.

Project Associated Expense	NDIC's Share	Applicant's Share (Cash)	Other Project Sponsor's Share Gavilon	Other Project Sponsor's Share ADM
Salary & Fringe Benefits	158,454		12,731	117,041
Information Technology Operating (years 3-4)				
Technical support			45,513	
Network maintenance			1,276	
Classroom maintenance			1,119	
licensing fees			87,954	
Total				
Printing and Research Supplies	14,950			
Indirect Costs	92,250			
Total Project Cost	265,564		148,593	117,041



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January 11, 2012

William Wilson, PhD
University Distinguished Professor
Agribusiness and Applied Economics
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Richard H. Barry Hall
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Fargo, North Dakota 58108-6050

Dear Dr. Wilson:

This letter is to indicate that ADM-Benson Quinn would allow its cash contribution to the NDSU Commodity Trading Room to be used as part of the industry match for the projected titled:

Renewable Energy Commodity Trading Educational Program

If you need further clarification, please let me know.

Very truly yours,

**ADM-BENSON QUINN, A DIVISION OF
ARCHER DANIELS MIDLAND COMPANY**

A handwritten signature in black ink, appearing to read "Scott D. Nagel".

Scott D. Nagel, President

SDN:sm

A Division of Archer Daniels Midland Company



January 23, 2012

Dear Dr. Bill Wilson,

This letter is to indicate the GAVILON would allow its cash contribution to the NDSU Commodity Trading Room to be used as the industry match for the project titled: Renewable Energy Commodity Trading Educational Program.

Please feel to call me for further clarification.

Sincerely,

Gregory Konsor

Vice President
Gavilon Grain

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