

Minutes of the
RENEWABLE ENERGY COUNCIL
Monday, April 20, 2015 – 1:00 p.m. (CDT)
Icelandic Room (Conference Call)
North Dakota Department of Commerce, Bismarck, ND

CALL TO ORDER

Members Present: Al Anderson, Rod Holth, Randy Schneider, Al Christianson, Mark Nisbet (phone), Kyle Bahls (phone), Terry Goerger (phone)

Others Present:

Andrea Pfennig, Department of Commerce
Karlene Fine, Industrial Commission (phone)
Denise Faber, Department of Commerce
Mike Mann, UND (phone)
Dr. Nancy Hodur, NDSU (phone)

Al Anderson, Chairman, called the Renewable Energy Council meeting to order.

WELCOME AND OPENING COMMENTS

Anderson welcomed everyone.

APPROVAL OF MINUTES

February 18, 2015, meeting minutes were reviewed.

Christianson moved to approve the minutes as presented. Schneider seconded the motion. All in favor. Motion carried.

PRESENTATION OF FINANCIAL SUMMARY

Fine presented the financial summary, which was also posted on the website. Uncommitted dollars available for projects as of March 31, 2015, is \$2,624,896.06.

CONSIDERATION OF AMENDMENT REQUESTS

R021-B: “Distributed Geothermal Power”;
Submitted by UND; Principal Investigator:
Michael Mann; Project Duration: 2 years;
Total Original Project Costs: \$200,460;
Current Total Project Costs: \$522,000;
Previously Awarded: \$100,230; Currently
Requesting: \$160,770 for a total amount of
\$261,000.

Pfennig gave an overview of the project. The primary objective is to demonstrate the technical and economic feasibility of electrical power generation using the heat contained in oil-field fluids. A geothermal system that has been designed and built through the combined efforts of UND and Access Energy will be installed at Continental Resources’ water supply well site near Marmarth, and the system will generate a continuous 250 kilowatts of electricity from non-conventional low temperature geothermal water. This is the final stage of a multi-phase project that began in 2010 and will have a total cost of \$3.4 billion. The reasons that they are asking for the change include the fact there has been a change in management structure at Access Energy, which shifted project management tasks over to UND, and then that resulted in an increase in the Olson Construction installation bid. They also had costs associated with dissemination of results that have been included. Analysis will be expanded to include the feasibility of applying this technology to other low grade heat sources. We originally funded it at \$100,230. They are asking for an additional \$160,770, which would be a total funding

amount of \$261,000. Their sources of match include DOE (\$97,000), and Access Energy (\$109,000); it's not clear how much of that is in-kind and how much is cash. Mr. Mann will speak to that. They have a new partner-Basin Electric with \$55,000. Just as a reminder, all 3 technical reviewers had stated that the project had high potential and had good value, and actually remarked how low the price was.

Mann stated the construction systems have been completed and they are ready to ship. They need to insure adequate funding to cover Olson Construction before moving ahead and getting the systems installed. Access Energy has agreed to cover all the costs for shipping, and for sending people up here to do the installation so that is essentially the \$109,000 that they will incur for the start-up phase of the project. Most of the other funding will be used to support Olson Construction in terms of getting the actual site work, and doing the installation, etc., with a little left for the results and recording activities.

Anderson asked if project management is overseeing Olson Construction's work and things like that? Mann replied yes.

Schneider asked why Access Energy is not involved to the extent they promised they would be when this project got started? Mann replied they overmatched their original commitment to DOE, so that portion was probably met the middle of last summer, so they probably committed more of their resources to the project than what was in the original contract. The cost to put the project together was actually more than what was anticipated back in 2009, when we put in our original proposal.

Schneider asked then if the original numbers were a little thin. Mann replied yes. This is a major project for us. The installation at the Continental Resources site was probably our biggest underestimation. Schneider asked how

much that was underestimated by. Mann replied it probably would be in the \$150,000 range. They didn't think there would be that much site work, and probably the cost per hour for example, of the site work. Other than the site, we also have extra requirements that need to be fulfilled so that we can guarantee the ramping up of operations.

Anderson asked how much is the estimate for Olson? Mann replied \$304,000.

Schneider asked about how much Basin Electric is contributing to this effort. Mann replied \$55,000 in cash.

Christianson asked about the \$15,000 in additional costs in travel that wasn't there before; is that because Access Energy is no longer going to manage the project? We all knew the project was going to be out there, and there would be travel involved. Where did that additional cost come from? Mann stated the travel amount is \$5,460, and the previous one that was submitted they didn't have the 1:1 match that would assume those costs, and UND would essentially have to eat the cost. If we are given an opportunity to add that back in, they would prefer to add that back to the project.

Schneider asked if there are any concerns that you will be coming back for more money, or are you confident that your estimating gets you where you need to be to complete this project. Mann stated that he did ask Olson Construction around Christmas to get them an updated bid, when Access Energy discussed changing roles, and to also provide what the new scope would be, and since this the primary cost, he is confident in this number.

Christianson asked if they asked for a "not to exceed" bid. Mann didn't think so. Christenson expressed a concern that the bid is already four months old. Schneider expressed a concern with Olson Construction's amount for construction

management. He believes that amount is high. Mann replied that there have been additional changes. Continental Resources has some additional requirements in terms of digital isolation valves, and protection if it goes down in the winter in terms of draining the system for freeze up protection, and some other changes that way that have occurred. There are some other factors that are in there that are currently affecting the project.

Schneider asked for an estimation of what percentage of completion they are at. Mann replied that the system is ready to ship, Olson hasn't done anything on site yet, and those dollars haven't been committed yet. They figure it will take four to six weeks to prep the site and get the units installed.

Schneider stated that he thought the site was prepped and the reason it drove up some of the costs was because of some of the geography of the site. Mann replied the existing site was prepped but they need to put in the footings and the piping for the new GFM units to the oil patch and the electrical connections – site prep has not been done yet. It's the additional work that's need to interconnect with the operating plant that Continental has that needs to be done.

Schneider asked for a best guess of percentage of completion. Mann replied if it's for the entire project that's probably 90%; for the installation itself then it's probably 10% done.

Christianson asked about what percentage of a contingency Olson has in their bid, and if there are contingencies on the rest of the project. Mann replied there is not a contingency.

Anderson asked if you have a lump sum bid or a time and materials bid. He stated it sounds like you have a time and materials bid with no cushion. Mann replied he thought they had a lump sum bid. Olson has been awarded the bid. Continental Resources mandates that they

use them because they are a preferred contractor.

Schneider asked where Olson Construction is located. Mann replied Buffalo, South Dakota.

R024-D: “Developing a Biomass Industry in North Dakota”; Submitted by NDSU; Principal Investigator: Nancy Hodur; Project Duration: 12 months; Total Project Costs: \$728,316; Previously Recommended Award: \$57,000 for Phase I; Currently Requesting: \$364,158 in total.

Pfennig gave an overview of the project. This project was presented at the February meeting. They feel there may have been some miscommunication and had requested the opportunity to come back and ask for an amendment and to clear up any miscommunication. The project had included the following tasks: 1) they would complete a feed for a commercial scale AFEX processing depot and that had 3 FELs. They also wanted to evaluate and identify suitable locations and market potential for AFEX depots in North Dakota, and then provide outreach and education and conduct an evaluation of ag producers willingness to supply biomass and livestock producers and operators willingness to feed AFEX treated biomass in North Dakota. The proposal heard in February had requested \$364,158, with a total project cost of \$728,316. Out of that \$364,158, about \$114,000 would go to NDSU and then \$250,000 would go to MBI. The applicant has stated the following, “If it was implied during the Renewable Energy Council meeting that focus group discussion could be done prior to FEL 1 and FEL 2, there was a miscommunication. The focus groups must be done in close conjunction with FEL 1 and FEL 2, and incorporate the cost refinements that are associated with work activities in FEL 1 and FEL 2. The foundation of this project is based on the NDSU/MBI partnership, and without MBI and the cost refinements that will come with the completion

of FEL 1 and FEL 2, focus groups would be meaningless. MBI's technical expertise and the refined cost estimates for construction and operations are at the core at identifying the best opportunities. Further, without the partnership with MBI, NDSU doesn't have access to confidential information needed to identify market opportunities, potential investors, and the most likely road to commercialization.

They are currently requesting a two-phase approach. The first phase would include the producer focus groups and interviews with commercial livestock operations based on cost estimates of design activities associated with FEL 1 and FEL 2, as well as inventory of commercial livestock operations in North Dakota. Upon completion of those activities, a go or no-go decision would be made to proceed to the final FEL 3 stage. For those first tasks, they are requesting \$242,724, and of that, \$150,000 would go to MBI. If both phases of the project are approved, the applicant states that the technology would be designed and ready for deployment. However, based on the information at the previous meeting, there is no guarantee that it would be deployed in North Dakota as opposed to a different state such as Michigan or Wisconsin, and if it does move forward in North Dakota, there would most likely be an additional request for funds to construct the plant.

Ms. Pfennig provided the following background information on the amount of funding that has been provided to AFEX. There was one project of \$800,000. Out of that, \$500,000 went to MBI, and then in 2010, we approved \$406,120, and of that \$300,000 went to MBI. Some of the concerns that Council members expressed at the February meeting include concerns about the economic feasibility of cellulosic ethanol plants, concern that the only market for this project is as livestock feed, concern regarding the ability to find the raw feedstock, and concern with the costs involved.

REC had recommended funding at \$57,000 for NDSU's portion of the project, with the following contingencies: NDSU must come back with additional data and support to the Council on whether to fund the Phase II, and then a report had to be provided on the focus groups and also a comparison of the CapX costs on the ethanol plant using their feedstock as compared to a traditional ethanol facility.

Hodur stated they have provided some additional materials to try and make sure that our project and the goals were clearly stated. Since our last meeting, we've also been able to provide letters of support, one from Elanco Animal Health stating their interest in going forward with the project, and a commitment of services from Dr. Virgil Bremer, and a letter of support of a commercial livestock producer in North Dakota. She stated that she had done some outreach to the livestock producers and hopefully that will help to address some of the Council's concerns that we didn't already have the support of the livestock industry. The producers stated they were very interested in learning more about this proposal, and if they can find a feed that has the same results and costs less, they are interested. She does have some information on whether the capital expense was the limiting factor in building and operating a cellulosic ethanol plant. It is their opinion that the real limiting factor is actually the supply chain issues. Essentially what this system of AFEX pre-processing depots does is solves that supply chain problem. The ultimate goal is not just to provide an alternate livestock feed on a small scale, but it's the goal to provide feedstock for commercial biofuels, materials and chemicals. This is a gateway market. MBI cannot guarantee the first one will be built in North Dakota, but they are very committed to building in North Dakota. The whole point is to build something in North Dakota.

Anderson stated that the Council has previously supported other similar projects, and there is

most likely to be an additional request if the plant is built in North Dakota. Any idea of costs on a plant like that? Hodur replied they did the CapX on those, and the capital cost for biomass pretreatment is under \$10,000,000 for a single plant. Relatively speaking to other plant facilities, that is really small. Their next step is looking for commercial investors.

Schneider asked about what the CapX would be on the actual ethanol plant costs. Hodur replied that it would be approximately the same as retrofitting. A typical corn ethanol plant costs about \$30 million to retrofit it to produce cellulosic feedstock. Retrofitting a corn ethanol plant that can process AFEX straight treatment would cost less than \$1 million. If you want to build one that would take AFEX green treated right from the start, it's roughly equal to current typical corn ethanol.

Schneider asked why the Council's current recommendation is not going to work. Hodur replied the reason that isn't going to work is because what they need to do now is refine the cost estimates, so we know what it is going to cost. We need to take those to the producers and also do an inventory of where we have the most likely circumstances for commercialization; where is the best possible location. We need the information, and without the partnership with MBI, we really don't have much to talk about. MBI has the technology and we have the desire to have that technology in North Dakota. We felt that the Council has been committed to trying to make sure that North Dakota becomes a leader and early adaptor and innovator. The livestock feed is just Part 1. The ultimate goal is the commercialization of biofuels, materials and chemicals.

Schneider expressed his concern with the Council already spending \$800,000, and we still don't have the information we need; there should be some information. Hodur replied that we do have some information, but the last

step is to actually design the engineering, and now that we have the engineers, we can go build one. We are one step away from being able to build one. Doing this front-end engineering and design study is the last step. We get that done and they are ready to license it and release it.

Hodur stated that she understands the Council's concerns and she is looking to find out and do whatever they can to alleviate those concerns. This project will go forward. With some of the funding that the Industrial Commission has provided in the past, MBI was very effectively able to leverage that and they were awarded a \$4.3 million DOE grant, which is what enabled them to do the scale up to do the preliminary trials and be in the position they are today. The Industrial Commission's commitment has been substantial.

Anderson commented that the frustration he has is that the State's actually put in \$1.2 million. Of that \$1.2 million, \$800,000 has gone to MBI and we are starting to get tired of continually funding, and questioning whether this is a wise investment. The fact that MBI would promptly walk away is a little bit concerning.

Hodur replied that it's not that they are walking away, but we don't have a partnership at that point in time. They partner with companies all over the country. They develop the technology and then they work with others to try and commercialize it. They are trying to have the licenses be non-exclusive so they want to be able to make sure the technology is open-access and can be implemented.

Anderson asked why they think North Dakota should keep pushing on this if Michigan or Wisconsin is possible. Hodur replied that those partnerships are on other projects but they are very dedicated to us and this project and making sure something happens in North Dakota.

ADMINISTRATIVE BUSINESS

Other Business

There was no other business.

COMPLETION OF BALLOTS

Pfennig asked for guidance on the requests for amendments. In this case, we had approvals, but we had changes to those. Schneider felt they were similar to change orders, and should be voted on. Council agreed.

Discussion of projects followed.

R021-B: “Distributed Geothermal Power”; Submitted by UND

Christianson stated that he would have to have a contingency before he could support the additional funding.

Schneider also expressed concerns with the open-ended bid. He is not comfortable with them coming back asking for an increase in dollars. The only thing that changed was with construction management, and \$160,000 is for construction management. He understands that there is some site work that needs to be done.

Anderson commented that the Council did think the initial estimate did seem low, and it does make sense that there should be requirement of a fixed bid and a not to exceed should be the amendment for the vote.

Holth commented that he has no problem with the project, but agrees there should be a fixed bid.

Christianson made a motion that we approve the project with the contingency that the contract with Olson Construction be a fixed bid, along with the other vendors, and that we receive a copy of the contract.

Schneider seconded. All in favor. Motion carried.

R024-D: “Developing a Biomass Industry in North Dakota”; Submitted by NDSU

Christianson commented that he was very surprised to have this project come back. He didn't feel there was any miscommunication on our end. He feels the \$1.2 million that we have put in has not produced an end. He believes it is time to revisit the idea that if projects do go commercial, they pay it back. He feels cooperative grants should be discussed for future projects.

Schneider stated he feels there are a lot of good projects out there that need funding. Some of these things are being heavily researched in other areas. He is confused that we need to interview farmers and ranchers, and then it was stated that “no we don't because that has already been done, and now we have to do engineering on what the facility is going to look like.” There seems to be confusion on what they intend to use the money for. He thought the Council was very specific on what the money was to be used for, and that was interviews for farmers and ranchers to see if there was interest. There is no clear picture as to what is going on with these funds.

Pfennig stated that with the revised ballot, the Council would be voting on funding the proposal that was submitted in February, and for the same amount, and it would be done in two phases. The first phase would release \$272,724 and then, at that point, once those first tasks are done, they would come back to the Council, provide a report on their activities with a go or no-go decision, and then the Council would vote on whether to release the remaining funding of \$91,434.

Schneider asked what they are doing in Phase I. Pfennig replied that in FEL-1, Contract with an Engineering, Procurement and Construction

partner; Complete an AFEX depot project scope, and charter that address throughput, biomass types, biomass handling and storage; Complete preliminary mass and energy balances for the depot. FEL-2 is Completion of design of depot-scale biomass handling, ammonia recovery, reactor, pelleting train; Complete preliminary Depot layout, project schedule; Complete preliminary depot cost estimate, and then also evaluate and identify suitable locations and market potential for AFEX depots in North Dakota, and provide outreach and education and conduct an evaluation of ag producers willingness to supply biomass and livestock operator's willingness to feed AFEX-treated biomass in North Dakota. That is included in the Phase I. Phase II would be the completion of FEL 3, which is Complete equipment specifications for vendor quotes; Complete 3-D CAD model of the depot, and Complete depot construction plan.

Hodur said that the information was accurate. She felt that the pay back, if the project went commercial, was already part of their agreement with the Commission based on the \$800,000 grant.

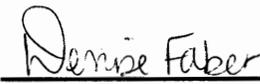
Fine reviewed the prior contract and stated that there is a provision regarding ownership of work product. In that provision we say all products, patent rights and fees to the contract resulting from this agreement are governed by Section 6.04 of the Biomass Policy. It refers back to the policies we had for the Biomass program. In looking at the Renewable Energy program policies, any costs that were incurred would be waived for the State. So the State would not pay for licensing fees. Fine will do some more research into this.

R021-B: "Distributed Geothermal Power";
Submitted by UND
Amendment
Fund with the contingency discussed.
Fund: 7 Do Not Fund: 0

R024-D: "Developing a Biomass Industry in North Dakota"; Submitted by NDSU
Amendment
Fund: 2 Do Not Fund: 5

ADJOURNMENT

Christianson moved to adjourn the meeting. Schneider seconded the motion. Motion carried. The meeting was adjourned at 2:09 p.m.

	<u>9/3/15</u>
Alan R. Anderson	Date
Chairman	
	<u>9/3/15</u>
Denise Faber	Date
Acting Recorder	