

Minutes of the  
**RENEWABLE ENERGY COUNCIL**  
Wednesday, November 14, 2012 – 10:00 am (CST)  
ND Dept. of Commerce, Icelandic Room  
1600 E. Century Avenue, Suite 2, Bismarck, ND

### **CALL TO ORDER**

**Members Present:** Al Anderson, Rod Holth, Mark Nisbet, Terry Goerger. Al Christianson and Randy Schneider.

**Members Absent:** Eric Mack.

#### **Others Present:**

Andrea Pfennig, Department of Commerce  
Karlene Fine, Industrial Commission  
Joleen Leier, Department of Commerce  
Don Dickie, Sirius (via telec.)  
Guojie Wang, NDSU Central Grasslands REC  
Paul E. Nyren, NDSU Central Grasslands REC  
Matt Danzl, NDSU Central Grasslands REC  
Karen Kreil, NDNRT  
Igathinathane Cannayen, Agricultural Biosystems Engineering, NDSU  
Mark Liebig, USDA-ARS  
Mike Clemens, SkyTrain PNS/Agrebon  
Dan Olson, PNS/SkyTrain  
Bill Wilson (telec.)  
David Ripplinger (telec.)

Al Anderson, Chairman, called the Renewable Energy Council meeting to order at 9:59 a.m.  
Anderson asked everyone to introduce themselves.

### **WELCOME AND OPENING COMMENTS**

Anderson welcomed everyone and expressed his appreciation for attending the meeting today.

### **APPROVAL OF MINUTES**

July 16, 2012 meeting minutes were reviewed.  
Al Anderson noted one correction on page 2, “two-lane” should be “Tulane”.

**Randy Schneider moved to approve the minutes as presented with noted change. Rod Holth**

**seconded the motion. All in favor. Motion passed.**

### **FINAL REPORTS AND DISCUSSION**

**Bulk Energy Storage for ND Wind Energy Integration - Dakota Salt** – Don Dickie gave update.

Schneider asked Don to share with us what type of plant would be producing the energy and how we are going to produce this energy? Dickie stated that large wind farms can produce electrical power, wind power is intermittent. Keep in mind peak power demands in your area, rather than cycle you want to run at a steady state. When wind is blowing at an off-peak time that energy will be stored in a cavern for future use. Can release air out of the cavern when needed.

Schneider asked, are we talking about these units being scattered throughout ND? Dickie stated we would look at the economics throughout the state and look at where the best hosts would be with the utility.

Schneider stated none of this will happen without creating caverns. What is the probability of this happening? Dickie stated they have not been able to make a business case for that; however, if the business case is strong enough to be able to put a CAES facility or multiple facilities into the state, caverns could be created on a stand-alone basis.

Anderson asked, when you are talking capital costs of X at \$312 million for a 390 MW plant, is that all above surface not including drilling of wells or making caverns or operating cost, correct. Dickie stated, yes that is correct.

Anderson asked, on the \$312 you are saying you would have a six-year payback just on the capital not including any drilling costs or operating expense? Dickie stated, certainly not including the creating and maintenance of cavern. When EPRI

put their program together, they did not include an operating model within it. But the overhead on a CAES plant would be fairly minimal compared to the installation of a cavern.

Nisbet asked, according to one of the numbers in there I saw you could potentially run your turbine producing electricity for 30-50 hours. How long would it take to fill up the cavern again, what is the cycle time on a process like that? Dickie stated, when your wind farm is operating, you may not be dedicating full amount for wind for storage. Ultimately, it would depend on how much of the wind farm operation you can dedicate for storage and how much you would be using at the time.

**Biomass Testing Lab** – Igathinathane Cannayen, Agricultural Biosystems Engineering, NDSU gave an update.

Goerger asked where the lab is located. Cannayen stated, it is located at the USDA-ARS in Mandan. Do you have some of the same equipment on the NDSU campus in Fargo? Cannayen stated, no. Will others from NDSU be able to use this lab if you need to? Cannayen stated, yes. So you set you baselines mainly on crop biomass, how about other types of biomass from other sources, can you do the same thing if needed? Cannayen stated, yes.

Goerger asked, who can use this lab? Cannayen stated, people contact him and he can coordinate for them to use the lab.

Schneider asked, who owns the equipment? Cannayen stated, NDSU.

Schneider asked, you stated you can use the equipment for other projects, are you currently using this for other people? Cannayen stated, no there hasn't been any requests yet.

Schneider asked, are you going to charge for the use of the equipment? Cannayen stated, no. To set baselines there is no charge. For analytical services, there would be a charge.

Schneider asked, where would we find the closest comparable equipment that you have in Mandan? Cannayen stated, everything is in one room and you can only find this in Mandan.

Nisbet asked about the baselines. Cannayen stated, switchgrass has a better calorific value for cofiring.

#### **Evaluation of Perennial Biomass Crops -**

Karen Kreil with ND Natural Resources Trust gave update along with Guojie Wang and Mark Liebig.

Mark Liebig from USDA-ARS gave update on soil quality.

Schneider asked, how deep was the soil profile. Liebig stated, they went down four feet.

Schneider asked, if you harvest every year is the soil better. Liebig stated, it really didn't make a difference in the soil properties.

Schneider asked, if you harvested every year, would your soil be better versus every other year? Liebig stated, it really didn't matter.

Schneider asked, when you are talking about biomass in the ground, are you talking about CO2? Liebig stated, I'm talking about mostly roots also sluff off carbon called rising deposits. That's the carbon we are talking about here.

Schneider asked, help me understand the economics of building this facility. Liebig stated that what they set out to do is actually different than the journey we've taken.

## **PRESENTATION OF FINANCIAL SUMMARY**

Fine presented the financial summary. Currently the Commission has \$1,668,640.58 available to be committed as of October 31, 2012.

## **CONSIDERATION OF ROUND 17 GRANT APPLICATION**

**R017-B: "Distributed Nitrogen Fertilizer Plant – Engineering & Development"; Submitted by Progressive Nutrient Systems LLC; Principal Investigator: Dan Olson; Project Duration: 6 Months; Total Project Costs: \$1,000,000; Request for: \$500,000.**

Pfennig gave an overview of the project. The overall reviewers' recommendations follow: Fund (243 and 199) and Funding May Be Considered (135). Average Weighted Score was 192 out of 250.

Commerce's recommendation is that funding may be considered. Suggested contingencies if awarded include the following:

1. Award amount is reduced to \$431,000 to be consistent with program policies. The following costs are ineligible expenses: permit fees, legal fees, and accounting and tax costs.
  - a. Additionally, it should be noted that match used for the APUC award is not eligible to be used as match for REC award.
2. Applicant provides a letter of support from EERC verifying that technology to be used is ready for this scale.
3. A letter of commitment/support is provided by Tharaldson Ethanol.
4. Funding is contingent on a successful feasibility study that is approved by the Council.

Holth asked, the amount of the grant request was lowered by \$69,000 but the categories that are mentioned total \$102,000 in the budget proposal (accounting, permitting, and legal), where does the \$69,000 come from? Andrea explained that she went through and visited with Dan on what the exact costs were and weeded out the ones that weren't eligible.

Dan Olson presented for Progressive Nutrient Systems LLC.

Schneider asked him to expand on the APUC grant. What are the goals and plans to get it through EPA? Olson stated they don't need any permitting on CO2 emissions. Their goal is to work closely with Tharaldson and Murphy Oil and all the others, and Great River, hopefully, into the future is to work it so we can determine by using the renewable fertilizer from the waste stream, what is going to be the end result. Will we reduce that 7 percent carbon makeup of the carbons in a gallon of ethanol on the fertilizer that goes on all of our farm fuels.

Anderson asked, on the additional revenues increase on more ethanol production, is that also a different valuation from RFS1 to 2? Olson stated, no.

Anderson asked, as it reduces the carbon footprint would you have any opportunity of qualifying for an RFS2? Olson stated, yes we strongly believe it will, but will take some time with EPA.

Schneider asked, what happens if EPA doesn't approve? Olson stated, it doesn't change because we are not including those numbers at this time.

Anderson asked about the price of fertilizer. Olson stated they were using \$600/ton in their model.

Schneider asked if the additional revenue of \$4 million is net profit or gross revenue. Olson stated, that is the gross revenue.

Schneider asked, where are the nine sites in North Dakota? Olson stated, there are multiple facilities in each site. That was a typo. They are actually looking at modules. We actually think that because of the economics we could go up to 15 modules at this point.

Schneider asked, what is your breakeven per ton. Olson stated, \$308 per ton.

Anderson asked, how do you view the impact of CHS building a fertilizer plant in Jamestown? Olson stated, the market is the market. Urea fertilizer where it's produced really doesn't make a difference. What we are going to do as individual farmers is put the equity into our plant. We then have the ability to control one of our inputs. If I have a percentage of ownership in that plant, I now can control one of my input costs. My share is about 5,000 acres of corn production that we would have enough adequate fertilizer supply for.

Anderson stated, from a producers standpoint it would be a financial hedge. Olson agreed.

Anderson asked, cost wise, these smaller facilities, you could ask a little higher for fertilizer, but the big guys have a tendency to come in and lower the price and try to hurt the little guys for a while. Olson stated that he doesn't believe the bigger facilities will come after the smaller facilities

because they will hurt themselves in the long run. They want to make sure that ethanol plant stays in business because we need it in North Dakota.

Schneider asked him to explain the new proprietary technology noted on page 5. Olson stated they are working closely with EERC on a new technology that will take the ammonia synthesis and change it into a thin film technology that we can actually produce ammonia tremendously more energy efficient.

Schneider asked, are you ready to build and bolt on to Tharaldson. Olson stated, yes they are. He stated that they have a letter from Tharaldson and Murphy Oil that they need this now. Olson will forward the two to Pfennig.

Goerger asked, you're claiming that the economic impact of project to be funded by the requested grant to be substantial. This is just an engineering package that you're asking for. We're not in the construction phase. How can you use an engineering package for construction? Olson stated, we have funded a lot of the engineering already, we need some help on the engineering side and are ready to move forward relatively quickly to get the project up and operational.

Why haven't the ethanol plants helped with the engineering to get it done faster. Olson stated Tharaldson doesn't have capital available. Murphy Oil is not unwilling, we have just had a discussion with them.

Goerger asked, you said Leading Edge Angels are in place? Olson stated, yes they are. Goerger asked how many members currently in the fund? Olson stated approximately 20 at this point.

Goerger asked about stabilization of fertilizer prices, is 12,500 tons going to stabilize the fertilizer price. Olson stated, stabilization for the fertilizer price is most critical for the plant. We will stabilize their supply and their price for them (the plant).

Mike Clemens stated their goal is to keep our plants in operation and efficiently. Let's keep the profits in North Dakota adding value to it instead of putting it on a train and shipping it to the west coast or the Gulf. We want to keep our ethanol industry lean and mean.

**R017-A: "Renewable Energy Commodity Trading Educational Program (Amendment)"; Submitted by North Dakota State University; Principal Investigator: William Wilson; Project Duration: 4 Years; Total Project Costs: \$1,000,000; Request for: \$265,654.**

Pfennig gave an overview of the project. The overall reviewers' recommendations follow: Fund 203 out of 250. Commerce's recommendation is to fund this project. No suggested contingencies.

Bill Wilson presented.

Schneider asked, have you had a chance to visit with Growth Energy, ACE, or RFA to let them know that this facility exists and that they can look at bringing people from other ethanol plants to this facility. Wilson stated, no, not yet. He requested Schneider send contact information to him.

Schneider asked, teaching all this and building world class students with critical thinking. Has that evolved into your curriculum? Wilson explained that in current undergrad class, everything goes back to a budget. That would be the scope of it. What I have my students do in commodity market is building budgets whether it is training budgets, margin budgets or farming budgets and tying dynamic linkages to these. What he does is take a comprehensive project and give you three days to analyze it, what is the most important information to get, put it together, make a decision and then defend it in three days in front of the class.

Anderson asked, are you digging into the contract world and can you partner with UND Law? Wilson stated he would pursue that.

**R017-B: "Distributed Nitrogen Fertilizer Plant – Engineering & Development" discussion:**

**Al Christianson moved to lower the funding to \$431,000. Terry Goerger seconded the motion. All approved. Motion passed.**

**Al Christianson moved that letters of support are required. Rod Holth seconded the motion. All approved. Motion passed.**

Randy Schneider stated we should get some letter from Ted if he completes that research in December where we know where it is at. Is that going to be part of it or is it not going to be part of it. Fine stated they could write that into the contract. Pfennig stated that the APUC grant they received was contingent upon them providing a letter from UND stating that the technology they were using was ready to be commercialized at that scale. The letter needs to be received before the APUC grant was granted to them.

Goerger asked if the APUC grant was to prove the lower carbon and how much did they receive. Christianson stated, yes it is to prove the lower carbon and they received \$94,000.

Schneider stated we need to start thinking more strategically long-term with limited resources.

Goerger stated, is it actual basic research or research to commercialization or pushing to commercialization is the next step.

Anderson stated if it's not necessarily North Dakota it better be close to commercialization. It must be distinctive to North Dakota or we won't get as much support. Need to make the products commercially viable. If it goes to commercialization, can we get some of the money back.

Next round is for January 2013. Next meeting possibly in March 2013 in Fargo.

**CONFLICT OF INTEREST**

**R017-B: "Distributed Nitrogen Fertilizer Plant – Engineering & Development"**

- Al Christianson

**R017-A: "Renewable Energy Commodity Trading Educational Program (Amendment)"**

- None

**ADJOURNMENT**

**Randy Schneider moved to adjourn the meeting. Al Christianson seconded the motion. Motion passed. The meeting was adjourned at 1:31 p.m.**

**COMPLETION OF BALLOTS**

**R017-B: "Distributed Nitrogen Fertilizer Plant – Engineering & Development"; Submitted by Progressive Nutrient Systems LLC.**  
Fund: 6 Do Not Fund: 0

**R017-A: "Renewable Energy Commodity Trading Educational Program (Amendment)"; Submitted by North Dakota State University.**  
Fund: 6 Do Not Fund: 0

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Alan R. Anderson	Date
Chairman	

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Joleen Leier	Date
Acting Recorder	

**OTHER BUSINESS**

Pfennig asked the Council about policies. In the past, Council discussions have suggested that energy storage projects shouldn't be included. Pfennig asked the Council if they would still like these projects included. Christianson stated, energy storage off of wind in the present day market, you won't make money.