Minutes of the

RENEWABLE ENERGY COUNCIL

Wednesday, April 18, 2012 – 1:00 pm (CST)
ND Dept. of Commerce, Icelandic Room
1600 E. Century Avenue, Ste. 2, Bismarck, ND

CALL TO ORDER

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

Members Absent: Eric Mack.

Others Present:
Andrea Pfennig, Department of Commerce
Karlene Fine, Industrial Commission
Joleen Leier, Department of Commerce
Yong Hou, Clean Republic
Alex Johnson, Solargylights/UND
Nancy Hodur, NDSU (telec.)
Bernie Steel, MBI (telec.)

Al Anderson, Chairman, called the Renewable Energy Council meeting to order at 1:00 pm.

WELCOME AND OPENING COMMENTS

Anderson welcomed everyone and expressed his appreciation for attending.

APPROVAL OF MINUTES

December 14, 2011 meeting minutes were reviewed.

Randy Schneider moved to approve the minutes as presented. Al Christianson seconded the motion. Motion passed.

PRESENTATION OF FINCNIAL SUMMARY

Fine reviewed the finances. As of April 16 uncommitted dollars are $1,893,959.84. There is approximately $2 million outstanding.

CONSIDERATION OF GRANT ROUND 15 APPLICATIONS

R015-C: "Innovative Lithium Battery Production for Renewable Energy Storage Systems"; Submitted by Clean Republic LLC; Principal Investigators: Yong Hou and Michael Shope; Project Duration: 24 months; Total Project Costs: $398,000; Request for: $185,000.

Pfennig gave an overview of the project. The overall reviewers' recommendations follow: Funding May Be Considered (132), (142), (149), and (169). Average Weighted Score was 146 out of 250. Commerce's recommendation is that funding may be considered for this project. There are no proposed contingencies.

Schneider asked if the principal investigators questioned knew about the new scoring system. Pfennig stated that information is on the website.

Alex Johnson and Yong Hu presented. Johnson stated he is not one of the principal investigators but represents a potential purchaser of the lithium battery being developed under this project.

Schneider asked if they can find lithium batteries for their system but the cost is $5,000-7,000 cost to your device? Johnson said yes, they tend to be 800-1,000 amp hour capacity plus (industrial). No one is making a battery in the niche market we are looking for (100 amp hours). We are looking to make a smaller battery for about $1,200-1,500, and that you can keep adding to them.

Anderson asked if the size battery you are presenting would replace the $400 lead acid battery. Johnson said not really, this is a 24-volt but only a 9 amp hour battery. You would need about 11 of these to make up a 100 amp hour battery. You don't need 100 amp hours of lithium to replace 100 amp hours of lead acid. Only require about half.

Anderson asked, is it the control system that allows you to protect yourself so it is licensable or deliverable to make this happen? Johnson said the BMS would be very specific to grouping these together and moving from soldering to welding. It saves about five times more efficiency by welding them together. You lose efficiency by running wires between the batteries. You have to find the balance between manufacturability and design.

Anderson asked if the intent is to commercialize the product. Johnson stated, yes.

Nisbet asked, are you hoping to drive the installation by improving the storage capability? Which comes first, do you have to make more installations before you make money? Johnson stated Solargy is already putting products out there. We use lead acid batteries. We have a hybrid controller that monitors the heat of the compartment of the batteries. We can add heat to it. You do need to replace batteries more frequently.

Nisbet asked about the length of the battery life cycle. Johnson stated 300 is average for lead acid. Typically we would say you would probably be looking at replacing batteries every two years; in North Dakota maybe every three to five years.

Schneider asked to clarify that the competitor is a 400-hour battery. Johnson Stated yes. Schneider asked if they have studied that market and if they know how big that market is and what kind of price elasticity you have. Also at what point could you capture the lead acid battery market? Johnson stated there are some areas of the market that will not be easy to capture until we can get mass production to bring the price down. As it stands right now, it will be difficult to justify an automobile battery. In our case, we are talking about Renewable Energy where you aren't in a position that you can plug something in. We are talking about the 100-hour battery where you would be in a position that you aren't near a place where you can plug things in. Where they see a lot of its use being was actually beyond just the application of the solar on street lights. He also stated that they have been in contact with Department of Defense, Department of Energy, and Oil Fields. There is a lot of application jus in the wind, solar system. They don't just have to be for solar street light applications.

Schneider asked, have you done a market study on the size? Johnson said they have run numbers through the Center of Innovation. It is a pretty good market.

Nisbet asked if they have been in contact with Dakota Turbines. Johnson said yes.

Nisbet asked, do you think this would change the price point? What do you see it doing to the whole concept of renewable energy? Johnson stated he believes it will help. You will need to work with your power company.

Schneider asked about wanting green energy and people being all for it, but when the cost is high the energy company begins to look good. Many people are researching batteries, what makes you special or different? Johnson stated he will only sell if it will honestly work for them, if green is important to them. There are customers that are living in areas where power isn't available to them. Our system would work well for them. We have people that have worked in the field and have pure desperation. We aim to keep technology out there that nobody else has.

Schneider asked that with the lithium battery, no one has researched and developed this narrow niche. This would be the first, correct? Hou stated that there is no standard on mass production. Johnson stated they are not built with the individual modular designs.

Anderson asked, is it fair to say that you could go out and custom purchase that battery 11 times and it might be in line, it wouldn't have your battery management system that will improve it and allow you to do some of that and would cost three to four times the cost of the lead? Johnson stated that right now they are more than four times the cost. Anderson asked if the target cost area is twice the cost of the lead battery. Johnson said target is twice the cost.

Nisbet asked about smaller applications, is there an upper limit? Johnson stated you can make it as big as you want to, but there are a lot of manufacturers out there for the larger batteries. You don't see it on the small scale.

CONFLICT OF INTEREST

R-015-C – "Innovative Lithium Battery Production for Renewable Energy Storage Systems"

- None

COMPLETION OF BALLOTS

R-015-C – "Innovative Lithium Battery Production for Renewable Energy Storage Systems"; Submitted by Clean Republic LLC.
Fund: 3 Do Not Fund: 3

ADMINISTRATIVE BUSINESS

Update on Current On-going Projects: Fine had distributed a summary sheet of project funded. She gave an overview on current projects.

Nancy Hodur and Bernie Steel have joined us via teleconference. Their project is developing biomaterial industry in North Dakota. They were granted a no cost one year extension and have good news to share with the Council.

Steel explained that based on the initial data from this project they were able to secure an award from the Department of Energy in the amount of $4.3 million of direct funding and we provided another $1 million of cost share for a $5 million project to build a pilot plant out of this project.

The no cost extension was to allow us to better align the design portions of the ND project with the DOE project. We have done that and are on the final stages of design. We should have the pilot plant up and running in the spring of 2013 at the latest. We are already set up to do initial large scale animal feeding trials for use as cattle feed next spring at Michigan State University. Since we announced the project with DOE we are getting a lot of commercial interest in the technology. I think we are lining people up now to talk to about actually building these commercial facilities to start making this material.

Schneider asked where the pilot plant is being built? Bernie stated it will be built at MBI because we were able to save so much money using our current pilot plant. First actual on-the-ground commercial plant may be in Minnesota with the Gevo facility there. Our plan is to commercialize these across the country on a nonexclusive basis including the Dakotas.

Hodur stated that they will still do all the things they did in the original grant. We will take a look at the regional impacts. In the end everything we said was going to be done, will be done.

Steel thanked the REC and Industrial Commission for giving us the seed money to get started.

Schneider asked what out of this is getting developed in North Dakota? Steel stated that depends on the commercial pull. Great River Energy is a partner on this proposal. There is still potential to get involved with the Spiritwood project.

Fine reviewed the current projects as follows:

Abundant Energy, Lake Region project: Have had delays. The size of wind turbines changed and they hope to have their turbine up by the end of the year. Wind Technician Program, educational piece, has gone very well and have received awards for that. We don't anticipate them actually getting the turbine up and electricity to the campus until the end of the year.

Small Wind Turbine Training Center, EERC: Did send in their final report, but they haven't done one of their training sessions we had asked them to do. They just got their turbine up. We are going to extend that just a little bit longer so we can get a more complete report.

ND Natural Resources Trust Project, Herbaceous Biomass Crops: Their final report is coming in at the end of this month.

As you go through these you should think about which ones you would like to hear from at the next meeting.

Renewable Electrolytic Ammonia Production from Water and Nitrogen, EERC: This project is proceeding on schedule now that their partners are lined up.

Dakota Turbines: Has had a little delay. They are going to ask for an amendment for another 3-6 months.

Bulk Energy Storage for ND Wind Energy Integration: They now submitted their final report. We had a little debate about their final report and their numbers. We were debating their actual cost. They will be completed.

Schneider asked didn't they abandon their effort from a potash mining effort and storage? Fine stated the final report will show you that the potash mining is separate; the project was to determine if the caverns that remained after the potash mining would be useful and economic for energy storage. The report reflects that there is a good storage capacity there, but because it is such a depth there are additional costs. The final report shows that there need to be more studying done to see if it will be economical.

Schneider asked if the $100,000 will be spent. Fine stated that the money will be spent because they completed the work and the study.

Spiritwood Project: This project is not listed because it is completed. I think you will want to hear from them at the next meeting.

Energy Beets Phase I: Is now completed. Holth stated that there really isn't anything new to share there.

Promoting Ethanol in ND: This project was done by the American Lung Association and is completed.

Renewable Oil Refinery Development for Commercialization: This is completed. They were to provide data to put a pilot plant (Tesoro) over there. They've completed all the work and the material is there. Do you want to hear from them at the next meeting regarding potentials now that all this data has been gathered? Anderson stated that a report from them would be beneficial.

Standardization of Combustion Characteristics, EERC: This has been completed. Christianson stated a written report would be sufficient. Fine stated the information is posted on the website for your review.

ComPAKer: They have kind of stalled. I have not had recent discussions if they will do any more.

Fine will work with those projects to see if they can be at the next meeting.

Next meeting will be July or August.

ADJOURNMENT

Al Christianson moved to adjourn the meeting. Randy Schneider seconded the motion. Motion passed. The meeting was adjourned at 2:46 pm.

Alan R. Anderson Date
Chairman

Joleen Leier Date
Acting Recorder