Minutes of a Meeting of the Clean Sustainable Energy Authority

Held on September 14, 2022 at 11:00 a.m.

2nd Floor Conference Room, Bank of North Dakota

Present: Lt. Governor Brent Sanford, Chair
Jim Arthaud
Joel Brown
Al Christianson
Christopher Friez
Terry Goerger
Robert (Mac) McLennan
Kathy Neset
Tom Erickson
Lynn Helms
Justin Kringstad
James Leiman
Rachel Retterath
Todd Steinwand
John Weeda

Also Present: All attendees are not known as this was a Teams event.

Lt. Governor Sanford called the meeting of the Clean Sustainable Energy Authority (CSEA) to order at 11:00 a.m. with a quorum being present.

It was moved by Joel Brown and seconded by Al Christianson that the revised September 14, 2022 agenda be approved as presented. The motion carried unanimously.

It was moved by Christopher Friez and seconded by Kathy Neset to approve the May 16, 2022 meeting minutes as presented. The motion carried unanimously.

Ms. Karlene Fine presented a summary of the financial report.

Clean Sustainable Energy Fund			
Financial Statement - Cash Balance			
2021-2023			
		Cash Balance	
July 1, 2021 Beginning Balance	$25,000,000.00		
Interest Income through July 31, 2022		$14,756.93	
Hydrogen Funding Income through July 31, 2022		$1,640,368.06	
Other revenues through July 31, 2022		$0.00	
Total Revenues		$1,655,124.99	

GF Grant Expenditures through July 31, 2022		$4,018,110.41	
Fed Grant Expenditures through July 31, 2022		$1,640,368.06	
Administrative Expenditures through July 31, 2022		$14,398.36	
Total Expenditures		$5,672,876.83	
Cash Balance as of July 31, 2022			$20,982,248.16

Outstanding GF Grant Project Commitments	-$4,981,889.59		
Outstanding Fed Grant Project Commitments	-$8,359,631.94		
Outstanding adm. expenses for 2021-2023 biennium (est.)	-$45,601.64		
		-$13,387,123.17	
Non-committed Cash Funding			$7,595,124.99

Federal Funds Appropriated for Hydrogen Projects*	$20,000,000.00		
Outstanding Hydrogen Grant Project Commitments (Fed Funds)	-$10,000,000.00		
Non-committed Federal Funding Authority			$10,000,000.00

Known and Potential Revenues for 2021-2023 Biennium			
General Fund (House Bill 1452)	$25,000,000.00		
Federal Funds.State Fiscal Recovery Fund - hydrogen development grants (Senate Bill 2345, subsection 36)*	$20,000,000.00		
Interest & Other Income	$25,000.00		
		$45,025,000.00	

*There is appropriated from federal funds derived from the State Fiscal Recovery Fund, not otherwise appropriated, the sum of $20,000,000, or so much as may be necessary, to the Industrial Commission for the purpose of providing hydrogen development grants, as approved by the Clean Sustainable Energy Authority, for the period beginning with the effective date of this Act, and ending June 30, 2023. The effective date of the Act was December 1, 2021. This $20,000,000 of hydrogen funding (federal dollars) will be drawn down as expenditures are disbursed.

Between March 1, 2022 and July 31, 2022, 7 grant payments were made in the total amount of $5,658,478.47. Subsequent to July 31, 2022 through September 2, 2022, $2,870,173.23 of grant payments have been processed. Loan Disbursements of $15 million have been made on one project; and loan agreements for the remaining four projects have all been executed.

Ms. Karlene Fine noted that there is funding available for the projects that the Authority has in front of them today.

Lt. Governor Sanford asked that the CSEA members declare if they have any conflicts of interest and hand in their forms. It is considered a conflict of interest for an Authority member if there is a monetary or material investment or interest in a project submitted for Authority consideration, such as

employment or individual investment. If a conflict of interest exists, then the member must disclose the nature of the conflict of interest prior to any vote by the Authority in consideration of the application. A motion must be approved to allow members with conflicts of interest to vote.

There were no conflicts of interests declared by any Authority voting members with regards to the three applications in front of them today. Tom Erickson was not present at the technical committee meeting but declared that he has a conflict with Liberty H2 Hub.

Mr. Al Anderson gave a brief summary of the projects before the Authority. He mentioned there were initially five projects, but 2 of the applicants dropped out on their own prior to the voting at the Technical Committee on September 8, 2022.

All projects voted on by the technical committee were voted unanimously as feasible, and recommendations were made to fund each of those projects. Two of the projects (C-03-02) and (C-03-03) were both recommended with contingencies. The recommended contingency for Project Phoenix was in regard to the location of the facility in North Dakota, and the contingency for Enerplus Geothermal was a robust communication plan with results shared with industry.

Mr. Anderson thanked the technical committee for doing a great job with these applications at the September 8, 2022 tech meeting.

C-03-01 – Liberty H2 Hub Front-End Engineering and Design; Submitted by Energy & Environmental Research Center; Total Project Costs: $24,290,528; Amount Requested: $10,000,000 (hydrogen grant)

Both technical reviewers had positive recommendations for this project, and one had an error. Bank of North Dakota had the economic feasibility as supportive, and this project received an average score of 41 from the technical reviewers. It was noted that all reviewers rated this project from fair to good, and the project has a strong tie to CSEA's purpose regarding the emission reduction sustainability.

Mr. John Harju gave a presentation on the Liberty H2 Hub Front-End Engineering and Design. The FEED study will generate a basis for financial investment in clean hydrogen technology- sponsors are committed to meeting the energy needs of today while investing in a sustainable, energy-diverse future. The study will also include designs for a complete clean hydrogen energy supply chain in North Dakota that will enable clean H2 supply to multiple sectors, including transportation, power, agricultural production, and industrial and manufacturing. It will also leverage North Dakota's existing renewable and fossil energy, carbon sequestration resources, and infrastructure, along with reducing the environmental footprint of energy production and use, while diversifying the economy.

The Front-End Engineering Design includes Hydrogen Production (Novel integration of commercial technologies, reduced life cycle carbon intensity H2) and Hydrogen Infrastructure (H2 storage and CO2 sequestration, H2 and CO2 logistics infrastructure, Ammonia manufacture).

The Deliverables for the project are to have project progress reports with a final project report summarizing FEED work products: process design drawings, electrical drawings, equipment

specifications, capital and operating cost estimates, project executing schedule, and permit strategy and applications.

The Project sponsors would be MPLX, TC Energy, and NDIC CSEA, with the lead organization being EERC. The project is broken down into five different tasks as follows: Task 1.0- Project Management and Planning, Tasks 2.0 and 3.0- Engineering Designs, Task 4.0- Permitting, and Task 5.0- Cost Estimating.

Mr. Harju stated that Clean H2 is a necessary component of a low-carbon energy future, and this project positions North Dakota to lead in new Hydrogen energy deployment. He also stated that LHH will enable expanded use of fossil and renewable energy while reducing carbon intensity and generating new value-add products. The project will also provide immediate emission benefits, a tool for decarbonizing multiple industries, and economic growth into the future.

In response to a question regarding the market and outlook of offtake with this new technology, Mr. Harju said it is part of Clean Hydrogen Future Coalition, includes vehicle manufacturers, existing energy production, and utilities. He mentioned that the Refining industry is one of the largest current users of hydrogen. Marathon mentioned that the production tax credits are a very attractive incentive and TC Energy has interest in long-haul trucking, natural gas blending, and food processing.

In response to a question regarding the anticipated development of the market and financial feasibility, TC Energy responded that the facility is designed to allow scalability to respond to the market.

Ms. Kathy Neset stated that this is an investment in research and is an important place to put our funds. She stated that timing is important, and North Dakota is in the top 3 states that are positioned to play in H2.

Lt. Governor Sanford reminded that $10 million in hydrogen funds come from ARPA, with an expiration date. He stated that this project can coexist with previous hydrogen projects funded by CSEA, and that it needs to happen prior to session, as CSEA should be a model of success for future funding. He then asked if anything else is coming with hydrogen.

Mr. Harju said there is nothing he is aware of on this scale that is on the horizon with Hydrogen. If they are successful in DOE funding, there will be a home for other investments and be an innovation hub.

A question was asked if we are sending the message that we want 2 hydrogen hubs, or if these projects will work together? Mr. Harju stated that the DOE hub concept is predicated on much more than one project and looks at multiple projects, infrastructure, etc. There is the capability of independent operation, but also the capability of collaboration where needed.

It was asked where the jobs are going to be created and what the location is for the project. Marathon preferred to keep those answers in confidence for commercial reasons.

Mr. Jim Arthaud stated that he sees the previous hydrogen project as a conversion, whereas this is new production, so they shouldn't force them to be married to each other.

Lt. Governor Sanford said they are not forcing them together, but rather talking about growing the pie. He mentioned that both can work with their individual business plans, multiple states and players will be involved, and that CSEA's job is just to allocate the $10 million in grants.

It was mentioned that FEED is very necessary for hydrogen development, but there's a risk that partners could later decide not to move forward after the economic feasibility study. It was asked what would happen in that scenario?

Mr. Harju stated that if that happened, another party could use their work and be much ahead of everyone else, but proper upfront investments could mitigate that risk. He mentioned that deliverables to the state would be a public product.

There was a short break and the meeting resumed as a working lunch.

C-03-02 – Project Phoenix: Manufacturing bio-degradable polymers using methane as feedstock; Submitted by Newlight Technologies, Inc.; Total Project Costs: $8,371,250; Amount Requested: $4,185,625 (grant)

This project supports the construction of a large scale AirCarbon PHB polymer production facility in North Dakota and will help the state achieve its 2030 carbon neutrality goals.

Mr. Al Anderson state that this project does meet the Clean Sustainable Energy Authority purpose of deploying large scale projects that reduce environmental impacts and creates sustainability. Completion of this study provides the necessary next steps of a much larger investment to a $250-400 million plant. They have designed a plant in Ohio but are still very interested in building a plant in North Dakota. Two of the technical reviewers rated this project as good, while one reviewer had some questions. The overall project goal of producing biodegradable plastic would contribute significantly to North Dakota's energy industries. The biggest risk noted by the reviewers was the lack of a fund commitment on the perspective of North Dakota. Other risks identified included long term cost competitiveness, demand relative to building two large plants, and ability of the company to raise adequate capital for two facilities.

Mr. Kenton Kimmel gave a presentation on Project Phoenix: Manufacturing bio-degradable polymers using methane as feedstock. It was stated that plastic pollution and climate change are the critical environmental challenges of our time, and that by 2050 the oceans will contain more plastic than fish, and half of the world's coral reefs will be gone. There has been a demand for a biodegradable, low-carbon alternative to plastic, but the global-scale demand has been largely unmet.

Newlight's vision is to harness greenhouse gas as a resource to create a consumer-driven pathway to reducing the amount of carbon in the air. Their mission is to use greenhouse gas to make PHB as a natural, biodegradable, carbon-negative replacement for plastic at a global scale. Through ten years of research, they came up with AirCarbon- a natural, biodegradable, carbon-negative material to help end plastic pollution and climate change. It performs similarly to polypropylene, the second-largest plastic in

the world, it is cost-competitive with a range of large-volume incumbent goods, and it is sustainable. Their goal is to create the leading market position in the $140 billion global foodware market.

Project Phoenix would bring the largest AirCarbon plant in the world to North Dakota. The project would be broken out into four phases: Phase I- Plant Viability Assessment, Phase II- Plant Design and Financing, and Plant Construction, Phase III- Plant Operation, and Phase IV- Plants Expansion and Downstream Applications. The location to achieve these targets would be at Marley Crossing, and the goal is to solidify input cost targets as delivery infrastructure is developed to make Marley Crossing the optimal petro-chem site.

The benefits this project would provide to North Dakota would be supporting the energy sector by building local petro-chem industry that utilizes large amounts of methane without building new interstate pipelines, helping the state build a viable, innovative, and sustainable industry that will contribute to the state's carbon neutral goals and image as a climate innovator, the future growth potential of several plants, and the opportunity to attract a young and talented workforce with the innovative carbon negative industries.

Lt. Governor Sanford said he is very proud to have interest from this company in North Dakota, and asked if they are comfortable with getting methane from oil and gas? They responded that they are very comfortable, and are offsetting emissions with other projects as well.

It was asked if this technology integrates well with the hydrogen hub and DAC hub, to which the response was yes, and that it is very economical with the new 45Q credits, and still economical without.

A question was asked regarding scale, bioreactors, and number of facilities to which they responded that they can scale up reactors 3x, but will also need multiple facilities.

A question was asked regarding cost in comparison to traditional plastic and the response was that it is on par once at scale.

It was asked where the investment funding is coming from to build multiple facilities. Mr. Kimmel's response was that they are still raising funds for this project, they have enough to get through FEED, have $200 million + committed, and many investors are waiting for FEED before they invest. The funding for the full buildout is not secured yet.

It was asked if salt is a large component of the process, to which they responded that it is like a "glorified Gatorade"- 1/10 as salty as the ocean and is a very small piece of costs. They are working with a partner in Trenton, Wellspring Hydro, on an agreement. The old salt mine in Williston was mentioned, to which they said they are doing research to see if their process could use oilfield brine, but it is challenging with how salty it is.

A question was asked about how much gas is going to be needed. The response was roughly 7 million cf/day, scaling up to 50 million cf/day. It was also asked if the quality of gas matters to which they said yes, there are some minimums that are needed.

There was discussion around the R&D already being in place with a Renewable Energy Council grant and if this fits into CSEA as it seems more like commercialization. Lt. Governor Sanford stated that this is exactly what CSEA should be doing, and it was added that ideally, this is how all projects should be.

A question regarding emissions was asked. Mr. Kimmel said some CO2, excess methane burned, and main waste product is wastewater (non-toxic).

It was asked how to address this project with their site in Ohio. They are currently under contract to build, they have infrastructure already built, have gas, can build faster, but have not done due diligence yet. They are currently still in FEED in Ohio. North Dakota is more conducive to future growth.

It was asked what could be done to make North Dakota more attractive than Ohio. Mr. Kimmel stated they need concrete infrastructure, utilities, etc. Marathon said they could have a lot of synergies between geology, infrastructure, etc. It was mentioned by Mr. Kimmel that they have a lot of waste heat as their process is exothermic, and that they also recover heat to dry products, but they have more waste heat than they know what to do with. Enerplus said that they have an idea for their waste heat.

There was a brief 15-minute break.

C-03-03 – Geothermal Power Generation for Oil & Gas Production; Submitted by Enerplus; Total Project Costs: $2,197,000; Amount Requested: $1,098,500 (grant)

Two of the reviewers rated this project as good, while one reviewer had it labeled as questionable. This project does meet the Clean Sustainable Energy Authority purpose of emission reduction, energy sustainability, and overall economics. One reviewer was most concerned with cost effectiveness. The applicant has significant operations in North Dakota and the only contingency recommendation was a robust communication plan to the industry.

Bonnie Ellwood gave a presentation of the Geothermal Power Generation for Oil & Gas Production. There are three different Phases to the project- Phase 1 is engineering and integration design, Phase 2 is piloting one new build pad, and Phase 3 is expanding pilot to additional pads to understand efficiencies. Industrial water coolers are currently used to meet polyethylene pipeline temperature specifications. Enerplus is proposing to alternatively use Geothermal technology to remove heat to meet pipeline temperature specifications and offset onsite natural gas driven generators. This would require tax incentives and/or carbon credits to offset additional cost for commerciality.

The main objectives in Phase 1 is engineering design and detailed cooling and power modeling, electrical engineering design and power market planning, ordering and manufacturing of two Sedna Sled Geothermal Systems, Geothermal leasing guidance, and permitting. In Phase 2 they will get Pilot results and understand consistency of KWH created, run time acceptability, and pipeline temperature specifications met. Phase 3 will be to understand the commerciality of concept and address risks such as supply chain constraints, high pressure activity concerns, weatherization, development planning, and permitting and contractual obligations.

There are opportunities in producing, temporarily abandoned and inactive wells across western North Dakota in the Williston Basin, and flow aggregation for power production volume and/or direct use.

Mr. John Weeda mentioned that he hopes this project succeeds, and it was asked if this requires tax credits to make it economic? Ms. Ellwood said yes, and that from their perspective, this is incremental. They already have infrastructure in the oil industry, it is economic at scale, and she can see it becoming economic on its own.

It was mentioned that it would not work for the full grid, but could work for microgrid, to which there was a response that many projects need their own renewable power, and this could work for them. Ms. Ellwood mentioned that areas of McKenzie and Dunn County are remote with frequent burnouts. There is a system of phased approach to keep it economic.

It was asked what percentage of Energplus pads are not hooked up to power? The response was 15-20% are hooked up, and the rest run on generators. From the development plans, none of the new wells are planned to be hooked up.

A question was asked if it will be constantly moving with declining well volumes? It was stated that it lines up and will need more power with initial production. Water is around 200 degrees and it needs to get down to around 100 degrees for Crestwood's pipeline. It is mobile and can be moved with a forklift, and could give older wells renewed life and use. Enerplus mentioned that State could step in here and allow circulation, injection and production to reheat water.

It was asked if there is limits on size of wellbores? It was stated that in traditional geothermal, yes, but this is modular so can be adapted and only needs about 1,700 bbls/day.

It was mentioned that no one is designing for natural cooling, summer fluid and winter fluid, and asked if anyone is looking at regions with a much better Delta-T? The response was yes, they are looking at over one million wellbores in the US that could be candidates for this, but North Dakota is greatly suited for this with a conductive climate for cooling.

It was moved by Al Christianson and seconded by Terry Goerger that under the authority of North Dakota Century Code Sections 54-63.1-06 and 44-04-19.2(1) the Clean Sustainable Energy Authority enter into executive session for the purpose of considering Clean Sustainable Energy Authority confidential information.

On a roll call vote Al Christianson, Chris Friez, Jim Arthaud, Joel Brown, Kathy Neset, Terry Goerger, and Robert McLennan all voted aye. The motion carried unanimously.

The Clean Sustainable Energy Authority is meeting in executive session to consider confidential information. Only CSEA members and Industrial Commission staff will be present during the executive session. Any formal action will occur after reconvening in open session.

Lt. Governor Sanford reminded those present in the executive session that the discussion must be limited to the announced purpose which is anticipated to last approximately 30 minutes.

The executive session began at 1:36 p.m.

The Meeting Closed to the Public for Executive Session Pursuant to NDCC 54-63.1-06 and 44-04-19.2(1)

CSEA Members Present:
Lt. Governor Sanford
Jim Arthaud
Joel Brown
Al Christianson
Christopher Friez
Terry Goerger
Robert McLennan
Kathy Neset
Tom Erickson
Lynn Helms
Justin Kringstad
James Leiman
Rachel Retterath
Todd Steinwand
Kelvin Hullet, BND Staff and designee for Mr. Steinwand
John Weeda

Others Present:
Al Anderson, CSEA Director
Karlene Fine, Industrial Commission staff
Reice Haase, Industrial Commission staff
Karen Tyler, Industrial Commission staff

During the Executive session, the Clean Sustainable Energy Authority took up the following items:

i. Review of Confidential Information

The executive session ended at 2:15 p.m. and the CSEA Committee reconvened in open session.

The CSEA took up each of the applications that had been heard for Grant Round 3.

It was moved by Mr. Christianson and seconded by Mr. Arthaud that the Clean Sustainable Energy Authority recommends that the Industrial Commission approve the Liberty H2 Hub project, submitted by EERC, as a hydrogen grant in the amount of $10,000,000.

Mr. Friez stated that the company team and EERC partner well and it will make for a strong project.

On a roll call vote Al Christianson, Chris Friez, Jim Arthaud, Joel Brown, Kathy Neset, Terry Goerger, and Robert McLennan all voted aye. The motion carried unanimously.

It was moved by Mr. Brown and seconded by Ms. Neset that the Clean Sustainable Energy Authority recommends that the Industrial Commission approve C-03-03 Geothermal Power Generation for Oil & Gas Production, submitted by Enerplus, as a grant in the amount of $1,098,500.

Mr. Brown stated that he was very impressed with the presentation and discussion was had around publicizing results from this project.

On a roll call vote Al Christianson, Chris Friez, Jim Arthaud, Joel Brown, Kathy Neset, Terry Goerger, and Robert McLennan all voted aye. The motion carried unanimously.

It was moved by Mr. Friez and seconded by Mr. Goerger that the Clean Sustainable Energy Authority recommends that the Industrial Commission approve C-03-02 Project Phoenix, submitted by Newlight Technologies, in the amount of $4,185,625 with the condition of Mr. Al Anderson including the phased approach, per their presentation, in the contract.

On a roll call vote Al Christianson, Chris Friez, Jim Arthaud, Joel Brown, Kathy Neset, Terry Goerger, and Robert McLennan all voted aye. The motion carried unanimously.

Discussion was had around policy and guidelines.

It was discussed that there would not be a new grant round if there is less than $1,000,000 left in the CSEA fund.

It was moved by Mr. Goerger and seconded by Ms. Neset that there would not be a grant round if there is less than $1,000,000 left in the CSEA fund.

On a roll call vote Al Christianson, Chris Friez, Jim Arthaud, Joel Brown, Kathy Neset, Terry Goerger, and Robert McLennan all voted aye. The motion carried unanimously.

Discussion was had on timeline from when an applicant can reapply for a grant.

It was moved by Mr. Brown and seconded by Mr. Friez that rejected applications are eligible for reconsideration after 6 months and demonstrated significant change.

On a roll call vote Al Christianson, Chris Friez, Jim Arthaud, Joel Brown, Kathy Neset, Terry Goerger, and Robert McLennan all voted aye. The motion carried unanimously.

Discussion was had on when a project can request more in funding and when loans can be utilized.

It was moved by Mr. Christianson and seconded by Mr. Friez that projects with grand funding cannot receive more except for extenuating circumstances, and loans can only be used after grants are spent.

There was a question regarding the wording and if it is specific to projects or companies. It was clarified that it would only be specific to projects.

On a roll call vote Al Christianson, Chris Friez, Jim Arthaud, Joel Brown, Kathy Neset, Terry Goerger, and Robert McLennan all voted aye. The motion carried unanimously.

Discussion was had around status reports. It was decided that summarized reports are best as full reports can be too much to read. It was mentioned that a red light- green light approach would be best as the Authority would want to know if projects are red or yellow (i.e. having issues). It was recommended that a system such as Power BI could be utilized to show reports and where projects are standing.

Discussion was had around session and how much funding to ask for. It was agreed upon that more discussion needed to be had to continue to work on those answers including grants, loans, 45Q direct pay, ESG concerns, Legacy streams, and SIIF for loans. It was stated that LIFT, University Research and CSEA will likely be competing against each other for streams funding.

Mr. Helms said that CSEA has done a great job so far, as they are funding 30% of grant requests, and could easily fund twice as much. $50 million for grants and $500 million in loans was a large consensus.

Lt. Governor Sanford thanked the Authority members for their work today.

With no further business, Lt. Governor Sanford adjourned the meeting at 3:05 p.m.

Karlene Fine, Recording Secretary