

Minutes of a Meeting of the Clean Sustainable Energy Authority
Held on May 16, 2022 at 11:00 a.m.
Pioneer Room, State Capitol

Present: Lt. Governor Brent Sanford, Chair
Jim Arthaud, CSEA Member
Joel Brown, CSEA Member
Al Christianson, CSEA Member
Christopher Friez, CSEA Member
Terry Goerger, CSEA Member
Robert (Mac) McLennan, CSEA Member
Kathy Neset, CSEA Member
Tom Erickson, CSEA Member
Rich Garman, CSEA Member
Dave Glatt, CSEA Member
Justin Kringstad, CSEA Member
Todd Steinwand, CSEA Member
John Weeda, CSEA Member
Kelvin Hullett, Bank of North Dakota
Al Anderson, CSEA Director
Karlene Fine, Industrial Commission
Jim Martel, Industrial Commission

Also

Present: As this was a Teams event a listing of attendees is not available

Lt. Governor Sanford called the meeting of the Clean Sustainable Energy Authority (CSEA) to order at 11:25 a.m. with a quorum being present. (Due to technical difficulties the start of the meeting was delayed.)

Lt. Governor Sanford recognized Representative Glenn Bosch who was present in the room for his leadership and his sponsorship House Bill 1452 that created CSEA. He noted that there has been considerable interest in the CSEA and that can be seen by the number of applications before the CSEA today. The projects that are being presented include: reducing emissions in oil and gas production; using emissions in ag bioprocessing; reducing emissions in coal generating power and ethanol plants, addressing emissions on site with flare gas capture and now looking at getting into the compressors on site so you can get to net zero on an oil pad. The job of this Authority is how to allocate the limited funds. Thank you to the Legislature for establishing the CSEA.

It was moved by McLennan and seconded by Christianson that the revised May 16, 2022 agenda be approved as presented. The motion carried unanimously.

It was moved by Neset and seconded by Goerger to approve the December 14, 2022 meeting minutes as presented. The motion carried unanimously.

Ms. Karlene Fine, Industrial Commission Executive Director/Secretary, provided a financial summary as follows.

**Clean Sustainable Energy Fund
Financial Statement - Cash Balance
2021-2023**

Cash Balance

July 1, 2021 Beginning Balance	\$25,000,000.00	
Interest Income through March 31, 2022		\$9,349.60
Other revenues through March 31, 2022		\$0.00
Total Revenues		<u>\$9,349.60</u>
Grant Expenditures through March 31, 2022		\$1,168,875.00
Administrative Expenditures through March 31, 2022		\$6,180.53
Total Expenditures		<u>\$1,175,055.53</u>
Cash Balance as of March 31, 2022		<u><u>\$23,834,294.07</u></u>
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Outstanding Grant Project Commitments	-\$16,831,125.00	
Estimated administrative expenses for 2021-2023 biennium	<u>-\$50,000.00</u>	
		<u>-\$16,881,125.00</u>
Non-committed Cash Funding		\$6,953,169.07
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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		<u>\$10,000,000.00</u>
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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	<u>\$25,000.00</u>	
		\$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.

Since March 1, one grant payment has been made in the amount of \$1,168,875.00 and a few requests are currently under review. Loan Disbursements of \$12.6 million have been made on one project; and two loan agreements are in the process of being executed.

	2021-2023 Biennium		
	General Fund	Hydrogen	Loan
	Grants	Grants	Authority
Appropriated	\$25,000,000	\$20,000,000	\$250,000,000
Grant Round 1 Awards	(\$18,000,000)	(\$10,000,000)	(\$135,000,000)
Grant Round 2 Availability	\$7,000,000	\$10,000,000	\$115,000,000

Lt. Governor Sanford asked that the CSEA members declare if they have any conflicts of interest and hand in their forms. Mr. Al Anderson, CSEA Director, reported on his meeting with the Ethics Commission Director and his recommendation was that the Authority follow the process they utilized last time. When you are considering whether you have a conflict-of-interest, the guidance is that you declare a conflict if you have a direct and substantial financial benefit in the application being considered—such as serving on the board or providing services for the project. 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. There is an acknowledgement that industry expertise is critical in making good decisions in this decision-making process. By default if no action is taken by the CSEA and you disclose a conflict you will not be voting on the application. If the other members of the Authority believe it is appropriate that a member be allowed to vote after a disclosure, a vote can be taken by the Authority to allow that member to vote. A motion must be approved to allow members with conflicts of interest to vote.

- Mr. Christianson disclosed regarding C-02-04, he serves on the Midwest Ag Energy Board.
- Mr. Friez disclosed regarding C-02-04, his employer has a very small interest in the Midwest Ag Energy Board (less than 10%--it is not material).
- Mr. Goerger stated he has no conflicts.
- Mr. Joel Brown stated he has no conflicts.
- Mr. Arthaud stated he has no conflicts.
- Mr. McLennan disclosed regarding C-02-09 he is employed by Minnkota Power Cooperative and will be abstaining.
- Ms. Neset disclosed regarding C-02-04 and C-02-05 she has no decision-making role with Enerplus and Midwest AgEnergy but does provide consulting services.
- Lt. Governor Sanford stated he has no conflicts.

It was noted that if the Authority members with a potential conflict abstained from voting there would still be a quorum present to conduct business on the project applications.

No action was taken by the CSEA regarding conflicts of interest.

Mr. Anderson stated ten applications had been received for Grant Round 2; two applicants withdrew early in the process and one applicant withdrew after going through the technical review process. The Authority has before it today grant applications in excess of \$30 million and loan applications in excess of \$224 million.

Mr. Anderson indicated that the Authority members have received the applications and the Independent Technical Reviewers Summaries prior to this meeting. In today's packets each of the Authority members have received copies of the CSEA Technical Committee results. As was done in Grant Round 1 the CSEA Technical Committee's role was to determine feasibility and make a recommendation on whether to fund

or not fund. The CSEA Technical Committee did not make any recommendations on funding levels. They did recommend some conditions should the Authority decide to recommend financial assistance. Their determination was that all the projects were feasible and recommended that:

- 2 - Fund
- 4 - Funding to be Considered
- 1 - Do Not Fund

Lt. Governor Sanford called on Mr. Anderson to give a summary of the applications, the comments from the Independent Technical Reviewers and the recommendations from the CSEA Technical Committee on each of the applications.

Because of technical difficulties the C-02-03 application was taken first.

C-02-03 – SAFuels X; Submitted by AIC Energy Corporation; Total Project Costs: \$357 million; Amount Requested: \$10 million (grant) \$25 million (loan); Project Duration: 2 years.

The purpose of the AIC Energy Corporation SAFuels X is to complete a state-of-the-art bio-refinery with the capability to refine 90-100 million gallons per year of crude soybean or canola oil and produce fuel for the Department of Defense (DOD) and commercial off-takers. Initial production will be 85-92 million gallons of ultra-low sulfur renewable diesel fuel or 53 million gallons of renewable jet fuel. These fuels are formulated to be direct replacement for fuels produced from petroleum crude oil, which reduces the new carbon dioxide by 41% over traditional jet fuel.

The utilization of valuable new technologies with tried-and-true methodologies makes an excellent blend in this proposal. The seed oil refining was highlighted as new and innovative and the catalytic deoxygenation as generally mature. The proposed equipment and plan are not out of the ordinary and for the most part readily available with some ongoing design work. The applicant has assembled an excellent team of collaborators for site preparation, design, construction, utilities, and transportation.

There would be a significant impact to ND's economy due to locally sourced input materials, increased short- and long-term employment, energy sustainability and both direct and indirect business development with the project. It was not clear if the partnership with the feedstock supplier is in place currently. Additionally, although fuel credits are expected to be approved for canola oil, this has not yet occurred.

The significant potential of the technical contribution was in the demonstration of a bio-refinery that is flexible in its ability to utilize different feedstock and yet achieve an ultralow pour point jet fuel requested by the DOD. It was also noted that the hydrogen needed for producing the biofuels comes from natural gas, a non-renewable source, which discounts the overall biofuels' renewability, but it does make perfect business sense for North Dakota resources.

The size and complexity of this project makes it have a 2-year timeframe which is aggressive, but the project has been well researched. Major permitting processes are planned over the next 6-8 months and a well thought out plan makes a 2024 start-up doable.

The \$10M grant request and \$25M loan request is less than 10% of the project (\$357M) cost. The applicant commits to matching the State's funding with greater than a 1:1 ratio with the primary use of funds as detailed engineering design. Long-term loans will also be sought for approximately \$250M (about 70%). It was noted that the project sponsor's share is considerable relative to the NDIC contributions and reflects a lasting commitment to the project's success. The CSEA funding will, however, be used for the early-stage planning and engineering design of the overall project.

The CSEA Technical Committee recommendation was:

The SAFuels X project is determined to be feasible and recommends that funding be considered with the following conditions: 1) all permits are in place and 2) an economic review is completed once the feedstock and offtake agreements are in place.

A presentation was made by Mr. Roger Grimes with AIC Energy for C-02-03 with comments from Trevor John, Mr. John Melk, and Mr. Holiday with the USDA/Rural Development office. A copy of the PowerPoint presentation is available in the Industrial Commission Office.

The CSEA discussed the following points with the applicant's representatives:

- Feedstocks sources – what agreements are in place – are they all North Dakota sources?
- Who is your EPC Contractor and their qualifications? Do you have concerns about supply chain in getting materials for building your facility?
- Economics on the project – federal involvement and incentives – substantial credits – is the aviation industry or Department of Defense willing to pay the higher costs for renewable fuels?
- What is the level of carbon emissions reduction when using renewable jet fuels?
- How many aviation companies are currently using renewable jet fuel?
- What is the timing of obtaining the USDA guaranteed loan – when is funding expected? (Targeted to be in late August)

Mr. Joel Brown stated that there is a study being done within McKenzie County to locate a canola processing plant in McKenzie County.

The CSEA took a short break at 12:20 p.m. and then resumed the meeting at 12:30 p.m. as a working lunch.

The next application summary was presented by Mr. Anderson.

C-02-01 – Flare Mitigation/Elimination through Wellsite Energy Recovery and Advanced Computing; Submitted by Digital Stream Energy; Total Project Costs: \$58 million; Amount Requested: \$15 million (loan); Project Duration: 2 years

Digital Stream Energy is expanding their well site flare elimination/mitigation operations with the addition of the patent pending Vulcan solution to enable North Dakota energy producers to eliminate flares, including flares that were once too small and uneconomical for other technologies. They pair Portable Data Centers (PDCs) with a source of power to add efficiency and value to a variety of stranded assets: flared gas in the oil field, overbuilt renewable energy, excess industrial power, or any other underutilized power source.

The goals and objectives of applying a technology that will utilize gas that would otherwise be flared at well sites would reduce emissions and has the potential to increase sustainability of the oil and gas industry. The facilities and equipment are already piloted and have a well-defined commercialization strategy. The applicant has been operating in the basin, has conducted technology testing with producers and has the necessary strategic partnerships to make this project successful. The quality and clarity of the methodology was average, and the scoring could have been increased with more budget and task detail.

The impact to ND's economy ranged from small to most likely significant. The higher ratings were linked to the novel and wholistic approach of utilizing flare gas to generate power that would otherwise have been lost. The project would capture an estimated 3 BCF of gas in 2022 and viewed as a significant scientific and technical contribution by 2 of the Reviewers. The other Reviewer thought the project was technically

sound but was really an expansion of an existing business utilizing the company's proprietary technology which was not new.

The impact to the overall oil and gas industry is important with its use of natural gas in the future as the state's GOR increases. The higher industry impact ratings noted the technology can be quickly deployed and have an immediate impact on the stranded gas while increasing jobs. The smaller impact scoring was since the funds will only be used to expand an existing business that the applicant is already engaged in.

The size and complexity of this project can be implemented within a 2-year period and the applicant has only requested a loan.

The \$15M loan request is about 25% of the project (\$58M) cost. The applicants' intention is to expedite purchase and deployment of equipment with match coming from company cash flow and investors.

The CSEA Technical Committee recommendation was:

The Digital Stream Energy project is determined to be feasible and recommends do not fund.

A presentation was made by Mr. George Chedsey and Mr. Javier Soegaard with Digital Stream Energy for C-02-01. A copy of the PowerPoint presentation is available in the Industrial Commission Office.

The CSEA discussed the following points with the applicant's representatives:

- Why do you need CSEA funding? Speed of commercialization
- Have you done quantification reports of before and after when utilizing your process? Carbon credits will require those kind of reports—not developed yet.
- What is unique about what you are proposing? Take 3 gases, blend them and get them to the correct pressure.
- Of the three gases how much of it can be low pressure gases? 10% high pressure some for intermediate; goal is to have 70% be low pressure gases.
- Have not decided on whether they will be selling their technology. Patent has just been filed in the last few weeks. They are looking at joint ventures.
- What options have you looked at if bitcoin goes away? Computing is not going away and their product could be repurposed.

The next application summary was presented by Mr. Anderson.

C-02-04 – Commercial Deployment of Carbon Dioxide Capture & Geological Sequestration in McLean County; Submitted by Carbon America Developments, LLC and Midwest AgEnergy Group; Total Projects Costs: \$68,934,121; Amount Requested: \$34,467,061 (loan); Project Duration: 18 months

The proposed project will bring a CO₂ capture and sequestration project into commercial operations in central North Dakota. This project captures Blue Flint Ethanol facility emissions and permanently stores them underground in saline formations. The successful completion of the project will demonstrate CO₂ can safely and efficiently be stored in McLean County. Once this is demonstrated, the project will enable larger scale projects in the future, locally and globally. This project will also enhance the financial viability of ethanol production and other associated businesses in the region.

All Reviewers rated the project to produce bioethanol at near-zero emission of CO₂ as technically good. The objectives and goals were in line with CSEA and the project has already been awarded a \$3M grant during the Grant Round 1 process. The commercial-scale project relies on well-proven technology and has an overall low project risk. The capture, compression and dehydration system is made up of commercially proven equipment. The storage is more challenging on the East edges of the basin, but the team performed

studies to understand their needs. The methodology is well developed and the quality of the project partners high.

The project is a technically sound, low-risk and high-impact decarbonization activity that is important to ND's economy. The production of renewable fuels has had a marked impact on the economy of ND and these facilities provide a value-added market to agricultural producers. There are numerous markets for biofuels that have aggressive carbon reduction goals. This translates into a financial opportunity for renewable fuel producers who can reduce the carbon intensity of the fuel they produce. Success in such an endeavor would ensure market access and enhance the financial stability of existing biorefineries.

The project is not new in industry with other similar projects moving forward at other biorefineries, however, the major scientific contribution is the establishment of the eastern range of the Williston Basin for CO₂ sequestration and the improved efficiency of the carbon capture compression and dehydration facility compared to those currently in operation.

The proposed technology is well-proven and with the well-developed methodology and strong, highly skilled team, the likelihood of achievable results in the planned (18 mo.) timeframe is high.

The requested \$34.467M loan is 50% of the project (\$68.945M) costs. The applicant commits to matching the State's funding at the 1:1 ratio of the project. Since the ratio would include the earlier grant (\$3M) awarded and does not recognize prior project spend, the maximum loan amount that could be considered is \$27.662M.

The CSEA Technical Committee recommendation was:

The Carbon America Developments, LLC and Midwest AgEnergy Group project is feasible and recommends funding.

A presentation was made by Adam Dunlop with Midwest AgEnergy Group and Mr. Brent Lewis with Carbon America Developments, LLC for C-02-04. A copy of the PowerPoint presentation is available in the Industrial Commission Office.

The CSEA discussed the following points with the applicant's representatives:

- Future carbon capture benefit to Ethanol Plants – where will the markets be in the future. It is important to be early in this market—the first projects will likely get their money back; later projects may not although the market for low-to-no carbon ethanol is expanding (aviation fuels, other states besides CA are looking for low carbon.
- Discussion has been for two wells--Midwest AgEnergy and Rainbow. Do you need two? Volume that will need to be sequestered will drive the need for another well. The plan is to maximize the usage of the wells and the storage area.
- One of the important factors of this project is getting information on the geology at this location.

The next application summary was presented by Mr. Anderson.

C-02-05 – Internal Combustion Engine Carbon Capture and Sequestration; Submitted by Enerplus Resources (USA) Corporation; Total Project Costs: \$18,110,000; Amount Requested: \$9,055,000 million (grant); Project Duration: 38 months

The proposed project is the implementation of a fieldwide carbon capture and sequestration project to reduce Greenhouse Gas (GHG) emissions on a field wide basis. Enerplus is partnering with a technology provider, who has designed, engineered, and will construct portable, scalable carbon capture facilities that use proprietary technology to collect exhaust gas emitted from stationary internal combustion engines.

These facilities, if successfully deployed at scale, have the potential to significantly reduce GHG emissions since new well pads use temporary generators powered by produced gas when grid power is inadequate or unavailable. The project is proposed in three distinct phases of funding.

The project to capture carbon from small-scale industrial sources in the oil and gas industry and sequester those emissions is technically good and would provide a long-term benefit to North Dakota if the technology is adapted. The 3-phased approach would provide a platform to test the developmental technology in a relevant environment. The appropriate strategic partnerships are in place and experienced in the critical aspects of the work.

The project would likely impact the State's economy on jobs, lower carbon emissions, and allowed continuation of oil and gas production. Stationary internal combustion engines are the second largest contributor to Enerplus' reportable emissions and are a necessary component of oil and gas production, powering instrumentation and artificial lift. The economics of small-scale carbon capture and trucked transport and disposal are likely challenging, and more details would be beneficial to ensure an economical approach is viable for the industry.

The size and complexity of this project's 3 phase plan results in a 38-month timeframe.

The \$9.055M grant request is 50% of the project (\$18.11M) cost. The applicant commits to matching the State's funding at the 1:1 ratio of the project. The 3-phased project proposal clearly states if the plan fails somewhere during the project, it will terminate, and other phases will not be completed, or funding needed.

The CSEA Technical Committee recommendation was:

The Enerplus Resources project is feasible and recommends consider funding with the condition that the funding be used only for the carbon capture portion of the project – not for the drilling of a well.

A presentation was made by Josh Ruffo and Bonnie Ellwood with Enerplus for C-02-05. A copy of the PowerPoint presentation is available in the Industrial Commission Office.

The CSEA discussed the following points with the applicant's representatives:

- There will be options on how to get the CO₂ to the storage site – perhaps trunk lines, perhaps trucking, unknown at this time.
- This is the initial effort – the hope is that the technology will allow any emissions to be captured; drilling rigs. Exhaust gas could also be captured and combined with the CO₂. Too early to know what the size of the unit is to do this.
- Calculations on what the net savings would be if this would be implemented. What would be the level of efficiency if this technology could be applied across the Basin? It is too early in the project to make those calculations. This is the start.
- There could be possibilities with biofuels.
- The location of the proposed well could be very important to the entire buildout. There is need to get sequestration into the heart of the Bakken.
- Scalability would be for both smaller applications as well as building it out for all the generators on a site.
- Suggestion was made that if discussions proceeded to using pipelines, commingling could be a possibility.
- Timeline on doing the testing for less than the 4 generators proposed and then for more than the 4 generators. – 1.5 years.
- Until the well is drilled what will be done with the CO₂ that is captured...will look for various options.

- Would they be able to proceed with stages one and two if they did not receive all the funding that was requested? Response was yes but the well is critical. Will need to have the well for commercialization.
- Discussion on the process of getting the cores—stratigraphic well is done first to get the cores; then that well can be converted to either an injection or a monitoring well. There is a learning curve with every well that is drilled.

The next application summary was presented by Mr. Anderson.

C-02-06 – Accelerating the Waste-to-Energy Commercialization Pathway for the Sandwich Gasifier; Submitted by Dakota Green Power; Total Project Costs: \$10,985,489; Amount Requested: \$5,371,457 (grant); Project Duration: 30 months

The proposed work will demonstrate at a commercial scale, the conversion of domestic waste resources into baseload electricity, heat, drop-in-fuel, or hydrogen using the patented sandwich gasification technology. The effort would involve the manufacturing, installation, and testing of a 25 ton/day gasification-based heat, electricity, and biofuels production facility in Grand Forks, North Dakota. The gasifier has been proven to operate on a range of complex feedstocks and the demonstration facility would streamline manufacturing of the technology, as its core business, and accelerate the commercialization pathway.

The quality and clarity of the methodology utilized in the project was very detailed and well analyzed. Building off the bench tested pilot scale system has improved the previously existing designs and a commercial scale would allow future customers to see before they buy. Reviewer questions included “what learnings are expected from the scaleup vs. the previous 5 ton/day unit” and “what changes are planned to overcome the challenges of getting sponsors and investors that occurred previously”. The facilities available and equipment to be designed were deemed notably to exceptionally good since the system has been tested/validated through previous development and the demonstration sized system will be critical for determining commercial viability.

There would most likely be significant impact to the state’s economy through the agricultural industry and community impact of addressing solid waste issues, just may not be near term. The conversion of waste streams into renewable forms of energy would contribute to ND’s energy which aligns with the CSEA goals. The successful demonstration of the gasification technology was likely achievable; however, concerns were identified around the drop-in-fuels and hydrogen objectives as not likely being achievable in the 2.5-year timeframe.

The technical qualifications and competence of the project principals was noted as exceptional. The team assembled has the experience in manufacturing and project management as well as the technical expertise.

The size and complexity of this project makes it have a 30-month timeframe.

The \$5.37M grant request is about 50% of the project (\$10.985M) cost. The applicant commits to matching the State’s funding with investments from Trilogy Financial Group, Tri-Steel Manufacturing, and other project partners. The cost share required has been identified but not committed at the time of submission.

The CSEA Technical Committee recommendation was:

The Dakota Green Power project is feasible and recommends consider funding with the condition that the applicant must provide an adequate business plan that shows significant opportunity and interest for deployment in North Dakota.

A presentation was made for C-02-06 by Nick Ralston and Nikhil Patel with Dakota Green Power and Bob Weir with the Corval Group and Joe Anderson with Trilogy Financial Group. A copy of the PowerPoint presentation is available in the Industrial Commission Office.

The CSEA discussed the following points with the applicant's representatives:

- How much power will be generated? Will depend on the client.
- Have had conversations with the power companies but do not have an agreement. There are localities around the world that need this type of technology and are willing to pay more. In North Dakota the economics will change because of the price of fuel.
- The goal is to be the manufacturer.
- Information was provided on where this type of facility is being used around the United States.
- The demand for this technology is significant; it comes down to the economics.
- Counties and cities are the customers especially in those areas where there is no space for landfills.
- The manufacturing facility to be built in North Dakota would be of significant size.
- The capital cost for a 25-ton unit is \$4 to \$5 million dollars.
- What do you need for an average price of waste coming in? This project will allow the applicant to run this process at a larger scale to determine the costs of the waste coming into the gasifier.

The next application summary was presented by Mr. Anderson:

C-02-07 – Green Hydrogen Generation and Storage System; Submitted by BWR Innovations LLC; total Project Costs: \$16.4 million; Amount Requested: \$5,764,000 (grant); Project Duration: 36 months

BWR has developed a green hydrogen generator and backup power system that uses renewable energy at a local level that would be otherwise lost, creating hydrogen through electrolysis. The hydrogen system provides an alternative for energy storage while providing the use optimization that will produce significant financial benefits. The captured hydrogen is used on-demand by fuel cells to produce electricity. An estimated 50% of green generated electricity is not used effectively and is either "lost" or not used. Now, excess renewable electricity is best captured at a local level, where use is optimized, and excess energy is stored as hydrogen. The project would deploy 20 pilot programs for 70 kW clean energy hydrogen generators and demonstrate the performance, near term and long-term value of the hydrogen system. Agricultural and oil/gas production installations have initially been identified.

This project is an interesting potential system to overcome one major problem with large scale integration of renewable energy that is not available "on-demand". The proposal is a straightforward purchase-build-deliver project based essentially around assembling established components into a modular system. The uniqueness is in the energy use optimization system and associated telemetry. Some felt the project was not transformative but rather integrative in nature but an impactful concept to decarbonization. The technical qualifications and competence of the project principals and team was better than average with a strong history of successful entrepreneurship and innovation. Having an existing grid operator as a partner would be beneficial.

The project would likely impact the State's economy. Making renewable energy more reliable is beneficial but with most of the materials and inputs being purchased from other vendors, most of the major impact will be on manufacturing of the units inside the state which may be longer term. A great deal of the appeal is to provide a better utilization of renewable energy sources in localized distributed systems and the targeting of the agriculture and oil and gas industries for application. However, since most project funds are dependent on these upfront sales of the systems, firm commitments of the 20-unit installations would be beneficial and should be included in the grant contract.

Overall, the project was viewed as technically feasible with concerns as to market viability. The demonstration and testing of a fewer number of installations may be warranted for consideration

The size and complexity of this project makes it have a 36-month timeframe.

The \$5.764M grant request is 35% of the project (\$16.4M) cost. The applicant commits to matching 8% of the grant with the remainder of the project coming from other sponsors. This project consists of 20 units, 10 each for agriculture and energy applications.

The CSEA Technical Committee recommendation was:

The BWR Innovations LLC project is feasible and recommends consider funding with the condition that the applicant provide an adequate business plan showing both opportunity and interest for deployment in North Dakota.

A presentation was made for C-02-07 by Tom Nelson with BWR Innovations. Dr. Joel Jorgenson had intended to be in attendance but because of airplane mechanical problems was unable to attend. A letter was distributed in response to the Independent Technical Reviewers' comments. A copy of the PowerPoint presentation is available in the Industrial Commission Office.

The CSEA discussed the following points with the applicant's representative:

- Is the current status of fuel cells ready for prime time? They have been told that this is the most innovative fuel cell in the market today; compact; longevity; no moving parts; fuel cells will be around for a long time. Technology is changing very quickly. Hydrogen storage is a key for the future.
- Currently in North Dakota the utility takes the risk not the retail customer. What is being proposed will provide the option that the retail customer will make the decision on the rates.
- Heavy duty vehicles in other countries are currently running on hydrogen.
- This application is to produce the powerhouse industrial units for the microgrid units.

The CSEA took a short break and reconvened at 4:00 p.m.

The next application summary was presented by Mr. Anderson.

C-02-09 – Project Tundra; Submitted by Minnkota Power Cooperative; Total Project Costs: \$1.45 billion; Amount Requested: \$150 million (loan); Project Duration: 4 Years

The goal of Project Tundra is to demonstrate post combustion carbon capture (PCCC) and storage in North Dakota, preserving the use of lignite and the associated jobs, ensuring enough reliable and dispatchable power is on the grid, and moving North Dakota closer to its carbon neutral goal. At 4,000,000 metric tons per year, the project will be the largest single-train PCCC in the world that will feature a “station” approach to carbon dioxide emissions control as opposed to the “dedicated unit” configuration being proposed by the rest of the industry. The state's commitment will demonstrate the project is worthy of consideration by the capital markets and help attract needed investment.

The project was viewed as an ideal fit for the CSEA program goals. Leadership has been provided by the applicant in the steps taken to address carbon management and work to protect their existing assets. The facilities and equipment available were scored as notably to exceptionally good. Most components are well known and have been used by industry extensively, however there are some unique features of this application. The team includes individuals and entities of exceptional merit, and the team is currently

completing a FEED study to firm up the component designs and get to the point of construction readiness. The project will be further strengthened when additional information concerning the engineering, technical and scientific aspects of the project are further developed. The quality and clarity of the methodology used was above average and in place for de-risking the project as they proceed.

The strength of this project is the need. The project addresses a singularly significant issue for the industry and state. Concern for CO₂ emissions is of the utmost importance and this PCCC project can provide a path to remove the threat. This project has many significant implications to the state's economy. Not only does it protect existing direct and indirect jobs, but it generates new employments as well. An equally important benefit is maintaining the affordable reliable electricity that drives our economy and provides economic competitiveness.

The size of the facility and project will provide a model for capture at other utilities and provide learnings for storage of CO₂ from any source in the region. Although there are some uncertainties as the technology is applied in ND on lignite at this scale. The team continues to work on reducing the uncertainties and the project is technically sound.

The size and complexity of this project makes it have a 4-year timeframe.

The \$150M loan request is only 10% of the project (\$1450M) cost but another potential request of an additional \$150M loan request may occur in the future. The applicant commits to the matching funding via the company investment and potential DOE grants and loan guarantees. Financial incentives are identified and clearly dependent on tax considerations.

The CSEA Technical Committee recommendation was:

The Project Tundra project is feasible and recommends funding

A presentation was made for C-02-09 by Stacey Dahl and Andrew Sorbo with Minnkota Power Cooperative. A copy of the PowerPoint presentation is available in the Industrial Commission Office.

The CSEA discussed the following points with the applicant's representative:

- The 45Q tax credit is for 12 years from date of first injection.
- Is there any discussion ongoing about changing the time frame of 12 years? There are ongoing discussions regarding the 45Q program including direct pay for these projects rather than using tax credits and increase the amount to \$85 a ton; lengthening the period time for capture.
- Construction financing would be done simultaneously when obtaining the tax equity financing.
- What is the impact if you receive less than what you requested? The project could move forward with less but it is an important part of the financing of the project. The funding from the State is important as the company seeks other financing at both the federal level and as they seek other capital sources.
- Time frame is 2026 for injection and 2023 – 2025 is the construction time frame.
- Partnership with Carbon Summit is beneficial, but Project Tundra is not contingent on that project. That project brings synergies to Project Tundra – it is a value adder to Project Tundra. It could allow for redundancies and having a backup source for moving CO₂. It was mentioned that after the 12-year tax credit limitation EOR is still a consideration for Project Tundra but it is not part of the current financial model they are using.
- Currently Project Tundra is working with DOE on a \$300,000,000 grant and working on a DOE loan guarantee. If you receive the grant, you are not eligible for the loan guarantee.

If 45Q tax credits are used for financing, the CO2 must be sequestered forever. After 12 years captured CO2 could be used for other purposes. It is difficult to project out that far because other options may be available such as a carbon tax that has been under discussion for a few years.

- Do not have an answer at this time of what the cost to the customer is when the tax credit goes away. It is a complex question without knowing what other related issues are taking place at that time.
- ESG is also impacting the industry.
- There was discussion on how the tax equity market works in regards to the 45Q tax credits. There is a cost to finding buyers of the tax credits.
- In response to a question, Ms. Dahl explained that the “whole station” concept evolved over time. Initially the project had looked at just one unit for carbon capture but as the project moved forward it became apparent that they should consider both units and thus the “whole station” concept provided the most value.
- When is the date for a “go/no go” decision. Still hoping by end of the year to make a decision; some of that will be driven by the DOE grant decisions and their timing. The federal infrastructure bill requires that two coal projects be funded.

It was moved by Christianson and seconded by Friez 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 Arthaud, Brown, Christianson, Friez, Goerger, McLennan, Neset, Lt. Governor Sanford voted aye. The motion carried unanimously.

Lt. Governor Sanford stated that The Clean Sustainable Energy Authority is meeting in executive session to consider confidential information. Only CSEA members. Bank of North Dakota staff and Industrial Commission staff will be present during the executive session. Any formal action will occur after reconvening in open session. I remind those present in the executive session that the discussion must be limited to the announced purpose which is anticipated to last approximately 60 to 90 minutes. The executive session will begin at 4:40 p.m.

The following CSEA members present in executive session were:

Lt. Governor Brent Sanford, Chair
Jim Arthaud, CSEA Member
Joel Brown, CSEA Member
Al Christianson, CSEA Member
Christopher Friez, CSEA Member
Terry Goerger, CSEA Member
Robert (Mac) McLennan, CSEA Member
Kathy Neset, CSEA Member
Tom Erickson, CSEA Member
Rich Garman, CSEA Member
Dave Glatt, CSEA Member
Justin Kringstad, CSEA Member
Todd Steinwand, CSEA Member
John Weeda, CSEA Member

Others present including Industrial Commission staff and BND staff:

Al Anderson CSEA Director
Kelvin Hullet, BND staff and designee for Mr. Steinwand
Karlene Fine, Industrial Commission staff

Jim Martel, Industrial Commission staff

During the Executive Session the CSEA took up the following agenda item:

Review of Confidential Information

The CSEA meeting reconvened in open session at 5:55 p.m.

The CSEA took up each of the applications that had been heard for Grant Round 2.

C-02-01 – Flare Mitigation/Elimination through Wellsite Energy Recovery and Advanced Computing; Submitted by Digital Stream Energy; Total Project Costs: \$58 million; Amount Requested: \$15 million (loan)

It was moved by Mr. McLennan and seconded by Mr. Goerger that the Clean Sustainable Energy Authority will not provide financial assistance for the Flare Mitigation/Elimination through Wellsite Energy Recovery and Advanced Computing application submitted by Digital Stream Energy based on the recommendation of the CSEA Technical Committee. On a roll call vote Arthaud, Brown, Christianson, Friez, Goerger, McLennan, Neset, Lt. Governor Sanford voted aye. The motion carried.

C-02-03 – SAFuels X; Submitted by AIC Energy Corporation; Total Project Costs: \$357 million; Amount Requested: \$10 million (grant) \$25 million (loan)

It was moved by Mr. Friez and seconded by Mr. Arthaud that the Clean Sustainable Energy Authority will not provide financial assistance for the SAFuels X application submitted by AIC Energy Corporation.

Mr. Friez stated it is great concept and a great project that he wants to see move forward but it is too early for this Authority to provide funding. With the limited funding that is available the Authority is supportive of the project moving forward but is not providing funding until they are farther along in the project.

On a roll call vote Arthaud, Brown, Christianson, Friez, Goerger, McLennan, Neset, Lt. Governor Sanford voted aye. The motion carried unanimously.

C-02-04 – Commercial Deployment of Carbon Dioxide Capture & Geological Sequestration in McLean County; Submitted by Carbon America Developments, LLC and Midwest AgEnergy Group; Total Projects Costs: \$68,934,121; Amount Requested: \$34,467,061 (loan)

It was moved by Mr. Brown and seconded by Mr. Arthaud that the Clean Sustainable Energy Authority recommend that the Industrial Commission provide financial assistance for the Commercial Development of Carbon Dioxide Capture & Geological Sequestration in McLean County project submitted by Carbon American Developments, LLC and Midwest AgEnergy Group as loan in the amount of \$15,000,000.

Mr. Brown stated this is an important project for the ethanol industry within North Dakota but also potentially transformational for carbon capture and sequestration by proving up the geology in McLean County where future important projects will be done. This project is expected to capture 200,000 metric tons of CO₂ a year.

On a roll call vote Arthaud, Brown, Goerger, McLennan, and Lt. Governor Sanford voted aye. Christianson, Friez, and Neset abstained. The motion carried.

C-02-05 – Internal Combustion Engine Carbon Capture and Sequestration; Submitted by Enerplus Resources (USA) Corporation; Total Project Costs: \$18,110,000; Amount Requested: \$9,055,000 million (grant)

It was moved by Mr. Arthaud and seconded by Mr. Goerger that the Clean Sustainable Energy Authority recommends that the Industrial Commission provide financial assistance for the Internal Combustion Engine Carbon Capture and Sequestration project submitted by Enerplus Resources (USA) Corporation as a grant in the amount of \$1,000,000 for Stages 1 and 2 of their project.

Mr. Arthaud encouraged the applicant to seek other funding for the sequestration well from the Oil and Gas Research Council. This project is an exciting opportunity to deal with emissions on well pads.

On a roll call vote Arthaud, Brown, Christianson, Friez, Goerger, McLennan, and Lt. Governor Sanford voted aye. Neset abstained. The motion carried.

C-02-06 – Accelerating the Waste-to-Energy Commercialization Pathway for the Sandwich Gasifier; Submitted by Dakota Green Power; Total Project Costs: \$10,985,489; Amount Requested: \$5,371,457 (grant)

It was moved by Ms. Neset and seconded by Mr. Brown that the Clean Sustainable Energy Authority will not provide financial assistance for the Accelerating the Waste-to-Energy Commercialization Pathway for the Sandwich Gasifier application submitted by Dakota Green Power.

Ms. Neset stated that at this point we are very limited on funding. It is a great project but we are really looking for something on a larger-scale that would be developed in North Dakota, We saw this as more of a manufacturing opportunity than a CSEA project. Lt. Governor Sanford stated that application of the end project in North Dakota was a concern.

On a roll call vote Arthaud, Brown, Christianson, Friez, Goerger, McLennan, Neset and Lt. Governor Sanford voted aye. The motion carried.

C-02-07 – Green Hydrogen Generation and Storage System; Submitted by BWR Innovations LLC; total Project Costs: \$16.4 million; Amount Requested: \$5,764,000 (grant); Project Duration: 36 months

It was moved by Ms. Neset and seconded by Mr. Arthaud that the Clean Sustainable Energy Authority will not provide financial assistance for the Green Hydrogen Generation and Storage System application submitted by BWR Innovations, LLC.

Ms. Neset stated this was a great project but does not believe it is game-changing for sustainable energy here in North Dakota. Lt. Governor Sanford noted that it is a manufacturing opportunity. Mr. Brown stated that there were no specific opportunities identified in North Dakota.

On a roll call vote Arthaud, Brown, Christianson, Friez, Goerger, McLennan, Neset, Lt. Governor Sanford voted aye. The motion carried unanimously.

C-02-09 – Project Tundra; Submitted by Minnkota Power Cooperative; Total Project Costs: \$1.45 billion; Amount Requested: \$150 million (loan); Project Duration: 4 Years

It was moved by Mr. Christianson and seconded by Mr. Goerger that the Clean Sustainable Energy Authority recommend that the Industrial Commission provide financial assistance for the Project Tundra project submitted by Minnkota Power Cooperative as a loan in the amount of \$100,000,000.

Mr. Christianson stated that this project will be game-changing worldwide with 4 million tons of CO2 captured. He noted that he had hoped more money could have been made available for this project because it is such a game changer, but the funding was limited. Hopefully this project will move forward, and the Legislature will provide more funding for these types of projects in the future.

Mr. Brown stated, based on the Bank of North Dakota's request, that the funds be advanced at the Bank of North Dakota's discretion

Ms. Neset stated that this fits the game changing narrative that the CSEA has and I am thrilled to see projects like this come before the Authority.

Lt. Governor Sanford noted that there is still a need for more funding for this project. Hopefully this funding will keep it moving forward to getting the support from DOE and from equity markets.

On a roll call vote Arthaud, Brown, Christianson, Friez, Goerger, Neset, Lt. Governor Sanford voted aye. McLennan abstained. The motion carried.

Lt. Governor thanked the Authority members and staff for their work today.

With no further business, Lt. Governor Sanford adjourned the meeting at 6:09 p.m.



Lt. Governor Brent Sanford, Chairman