

Minutes of a Meeting of the Clean Sustainable Energy Authority (CSEA) Technical Committee
Held on May 10, 2022, at approximately 1:09 p.m.
DMR West Conference Room, 1000 East Calgary Avenue, Bismarck

Present: Lt. Governor Brent Sanford, Chair
Tom Erickson, SERC/EERC
Richard Garman, Department of Commerce
Dave Glatt, Department of Environmental Quality
Lynn Helms, Department of Mineral Resources
Justin Kringstad, North Dakota Pipeline Authority (portion of meeting)
Rachel Retterath, Outdoor Heritage Fund Representative
Todd Steinwand, Bank of North Dakota
John Weeda, North Dakota Transmission Authority

Also

Present: Al Anderson, Industrial Commission
Karlene Fine, Industrial Commission
Kelvin Hullet, Bank of North Dakota
Katie Haarsager, Industrial Commission
Jim Martel, Industrial Commission
Brock Wahl, Industrial Commission
Members of the Press
A complete list of attendees is unknown as the meeting was held on TEAMS

Lt. Governor Sanford called the meeting of the Clean Sustainable Energy Authority (CSEA) Technical Committee to order at approximately 1:09 p.m. with a quorum being present. Lt. Governor Sanford welcomed Richard Garman as the Department of Commerce's representative on the CSEA.

It was moved by Todd Steinwand and seconded by Rachel Retterath that the May 10, 2022, meeting agenda be approved as presented. The motion carried. Justin Kringstad was not present for this vote.

It was moved by Rach Retterath and seconded by Tom Erickson that the December 8, 2021, meeting minutes be approved as presented. The motion carried. Justin Kringstad was not present for this vote.

Ms. Karlene Fine, Industrial Commission Executive Director/Secretary provided the following financial summary.

**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		<hr/> \$9,349.60

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)		<u>-\$10,000,000.00</u>	
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.

Clean Sustainable Energy Authority

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 Technical Committee members declare if they have any conflicts of interest and hand in their conflict-of-interest forms:

- Rachel Retterath stated that she has a conflict on Application C-02-04 – submitted by Carbon America Developments, LLC and Midwest AgEnergy Group. She stated she will be serving on the board of Midwest AgEnergy Group.
- Tom Erickson stated that the EERC will be performing work for the applicants in Application C-02-04 – submitted by Carbon American Developments, LLC and Midwest AgEnergy Group. On C-02-09 – Project Tundra submitted by Minnkota Power Cooperative the EERC is not listed as working on that project but because the EERC has been linked with Project Tundra all along and they anticipate doing future work the EERC does have a financial conflict. He noted that in C-02-06 Accelerating the Waste-To-Energy Commercialization Pathway for the Sandwich Gasifier there are references to EERC technology. The EERC has transferred that technology to an inventor and has no royalties, no financial gains or anything from that project and are not participating in the project as presented.

No action was taken to allow these individuals to vote on the projects where they have noted a conflict so they will be abstaining from voting on C-02-04 and C-02-09.

CSEA Technical Committee members not having any conflicts were: Garman, Glatt, Helms, Kringstad, Steinwand, Weeda. Although he does not vote as a Technical Committee member, Lt. Governor Sanford stated that since he chairs this meeting, he was declaring that he did not have any conflicts.

Mr. Anderson reminded the Technical Committee members that their role today is not to determine a funding amount but their actions can provide input to the CSEA as the projects are prioritized. There is not sufficient funding available to approve all the funding requests.

Mr. Al Anderson, CSEA Director presented a summary on the applications submitted in Grant Round 2. He stated that 10 applications had been submitted with funding requests. After staff review two applications were withdrawn.

C-02-01 – was delayed until Justin Kringstad was present. Mr. Kringstad was currently testifying before a legislative interim committee.

C-02-02 – Hydroil McKenzie #1 Slurry Fracture Injection TENORM Disposal Facility; Submitted by Hydroil Solutions, LLC; Total Project Costs: \$13,852,914; Amount Requested: \$2,500,000 (Grant)

The purpose of the Hydroil McKenzie #1 Slurry Fracture Injection TENORM Disposal Facility is the development of a slurry fracture injection (SFI) facility in McKenzie County to offer a local and environmentally responsible option to dispose of radioactive waste generated by in-state oil and gas operations, but currently hauled to out-of-state landfills.

Scores:	Technical Reviewer 1	219	
	Technical Reviewer 2	183	
	Technical Reviewer 3	210	
	Average		204

Technical Reviewers' Comments

- The 3 Reviewers ranged from good to fair to less than fair on overall technical soundness. The project would result in an emissions reduction and would deliver technology for TENORM waste disposal. The difference in ratings stems, in part, to the belief by two Reviewers that the technology already exists and a competitor has already deployed similar technology in the Bakken.
- The \$2.5M grant request is about 18% of the project (\$13.853M) costs. The applicant commits to matching the State's funding with company cash flow and federal loans. The CSEA grant funds will be used to match the applicant's equity contribution needed for loan closing (60% of project).
- 2 Reviewers thought the project would be a relatively small impact to the State's economy. One Reviewer indicated the project would most likely impact the economy in the near term and would be very positive for the oil and gas industry.
- Two Reviewers indicated the quality and clarity of the methodology used in the proposal was above average and provided a high-quality overview of the project and significant level of detail. The other Reviewer thought the methodology on project and budget was fairly clear but lacking on construction and processing slurry.
- The Reviewers scored the facilities and equipment for the commercialization strategy as adequate to notably good. The proposed equipment and plan is complete and readily available with some uncertainty with current market delivery.
- Two Reviewers rated the budget as comprehensive and likely sufficient to complete in the proposed timeframe. Concerns exist with current market instability. One Reviewer indicated the requested budget appears to be most likely sufficient to accomplish the effort. An additional significant level of concern was noted on the applicant's ability to manage the long-term liability of a waste disposal facility especially with the grant being used to secure loans for 60% of the project.
- Reviewer ratings varied from limited to adequate to better than average on strategic partnerships. The team assembled has all of the right capabilities and experience to manage the proposed project, however, there is no mention of oil companies which have signed on as potential clients.
- All Reviewers believe the project will likely achieve its technical and market goals. The project has been well researched, and the applicant will be applying proven technologies for similar processes, however, current market uncertainty will have an influence on maintain the proposed budget.
- The scientific and/or technical contribution to address goals of impacting technology varied significantly from small to very significant. Some Reviewers felt the contribution to the oil and gas industry would be significant while others thought the proposal utilized already deployed technology and was more like a normal business progression.

- Two Reviewers rated the project management plan as notably good, well laid out and easy to follow. While, one Reviewer said the project management plan was adequate and well defined.
- Two Reviewers indicated the background and experience of the project principal's technical qualifications and competence as better than average. The other Reviewer noted the team has the qualifications necessary to adequately complete the project.
- Overall:
 - One Reviewer indicated the proposed project seems to meet the intent of the CSEA objectives. The technology is used in Texas, Alaska, and California so it appears to be proven and current pressure on fossil fuels and market uncertainty present obstacles on being able to maintain a proposed budget.
 - One Reviewer indicates two significant concerns.
 - The lack of support from a major oil operator in the Williston Basin.
 - The applicant's ability to manage the long-term liability of operating and closing a waste disposal facility with only 50% match funds and remainder of funding loans.
 - One Reviewer believes the proposal was well written and a quality application of good technology. This Reviewer is concerned that the technology while not widely utilized in the state, is already deployed by another entity, and that the requested funding would simply be helping a competitor.

The Technical Committee discussed the following points:

- It was confirmed that this technology is already deployed, and there is a competitor in full operation.
- The proposed location has received very serious challenges by the Township Board and the County in terms of the ability to handle traffic in and out of the facility; it is located within the setback of an apartment building although they have a variance from the apartment building owner; the location is within 100 feet of Western Area Water Supply Authority's (WAWSA) storage tanks and pipelines that provide all of the drinking water to Watford City and most of McKenzie County and none of the concerns about dust control, or potential impacts to the WAWSA system have been addressed. Very low probability this project will be able to resolve these issues and get a permit from the Township Board.
- Technology-wise this is proven technology. This project is not researching the technology and it is already commercialized elsewhere in McKenzie County.
- There has been no state funding made available to this entity nor to the competitor.
- Location means everything for these facilities and the further away you can get to inhabited buildings, the better.
- It was noted that the Department of Environmental Quality requires bonding that would cover the cost for closure of the facility. Before the applicant could operate, they would have to provide that bonding.

C-02-03 – SAFuels X; Submitted by AIC Energy Corporation John F. Melk; Total Project Costs \$357,000,000; Request for \$10,000,000 (Grant); \$25,000,000 (Loan)

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.

Scores: Technical Reviewer 1 258

Technical Reviewer 2	291	
Technical Reviewer 3	294	
Average		281

Technical Reviewers' Comments

- All three Reviewers rated the project to utilize locally available vegetable oils to produce renewable jet and diesel fuel as technically good. The objectives and goals were very to exceptionally clear and in line with the CSEA funding mission.
- The \$10M grant request and \$25M loan request is less than 10% of the project (\$357M) costs. 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%).
- Two Reviewers thought the project would have a significant impact on the State's economy, while the other Reviewer rated it as most likely to have a significant impact. These high ratings noted locally sourced input materials, increased short- and long-term employment, energy sustainability and both direct and indirect business development with the project.
- Two Reviewers indicated the quality and clarity of the methodology used in the proposal was well above average while the other Reviewer indicated an above average score. The seed oil refining was highlighted as state-of-the-art technology and catalytic deoxygenation as generally mature and being utilized by existing and/or emerging industries while the technology providers were identified as leaders in the field.
- The Reviewers scored the facilities and equipment for the commercialization strategy as notably good to exceptional. The proposed equipment and plan are not out of the ordinary and for the most part readily available with some ongoing design work required for necessary facilities and equipment fabrication.
- All Reviewers rated the budget as comprehensive and most likely sufficient to complete in the proposed timeframe. 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.
- Two Reviewers rated the strategic partnerships as exceptional while the other Reviewer provided a better than average rating. The applicant has assembled an excellent team of collaborators for site preparation, design, construction, utilities, and transportation. They have all of the right capabilities and experience to manage the proposed project, however, it was not clear if the partnership with the feedstock supplier is in place at this stage.
- All Reviewers believe the project will most likely achieve its technical and market goals. The project has been well researched, and the project is well underway with major permit processes planned over the next 6-8 months. The well thought out and detailed plans should enable a 2024 start-up.
- The scientific and/or technical contribution to address goals of impacting technology varied from significant to extremely significant. The significant potential was in the demonstration of a state-of-the-art bio jet fuel facility that is flexible in its ability to utilize different feedstocks and yet achieve an ultralow pour point jet fuel.
- Two Reviewers rated the project management plan as notably good, with the other Reviewer rating the project as exceptionally good. The timeline is very reasonable and well-thought-out with the appropriate personnel with expertise in various fields identified and in position.
- Two Reviewers indicated the background and experience of the project principal's technical qualifications and competence as exceptional. The other Reviewer noted the team has the better than average qualifications necessary to complete the project.

- Overall:
 - One Reviewer indicated the proposed project meets the intent of the CSEA objectives. The utilization of state-of-the-art hydrotreating catalytic technology with refining vegetable oil to produce bio jet fuel for the DOD provides a strong proposal. The profitability and operation sustainability of this facility is directly linked to the feedstocks. Although soybean oil is planned initially it is anticipated that fuel credits will also be approved for canola oil. This reviewer was optimistic that the credits will be granted and was supportive of consideration for funding.
One Reviewer thought the application was a great project that would significantly contribute to ND's clean energy industry and sustainable environment with the utilization of locally available feedstocks. Although the Reviewer noted that the hydrogen needed for producing the biofuels came from natural gas, a non-renewable source, which would discount the overall biofuels' renewability, made perfect business sense for ND and recommended funding.
 - One Reviewer believes the proposal is an excellent blend of incorporating additional and valuable new technologies to tried-and-true methodologies. The outputs from the project are both reliably in demand (given federal legislation) but also offer significant benefits in terms of sustainability relative to petroleum-derived fuels. This, in addition to jet fuel having few alternatives to decarbonization, makes the project a niche but meaningful and long-term impact to clean and sustainable energy.

The Technical Committee discussed the following points:

- The EERC has worked with this technology in the past and has no question that the technology is ready for prime time. This is all about economics – the costs of the product going in and the off-take agreement with the Department of Defense.
- An issue to consider is the number of acres that would be required to provide the vegetable oils for the jet fuel. On a smaller scale it is advantageous to develop this technology but on a big picture basis this cannot be the solution for replacing fossil fuels.
- Is there any carbon capture with this project?
- Mr. Erickson was asked the question if this is the same technology that Marathon is using for the renewable diesel plant in Dickinson? Hydrotreating corn oil and soybean oil—it doesn't create biodiesel; it is a different chemical product that is identical to crude oil diesel. Mr. Erickson stated that he did not know the specifics of the Marathon process however, it is very similar. Many entities across the United States including the EERC and UND have IP in this area.
- The location is good and the focus on canola is good with the caveats of how much of this can we grow and still produce food. Caution flag--we already have a facility in North Dakota that is using the same or similar technology.
- It was noted that there is a difference from the Marathon plant in that this proposal would have the ability to pre-treat on-site vegetable oil from its raw form. The Marathon plant also does not have the ability to use canola oil without some additional investment.
- In response to a question, Mr. Glatt stated that the applicant has not approached DEQ about a permit and the permitting process is based on location and takes 6 to 9 months.

A question was noted for all these types of proposals. The applicants state they will be reducing carbon emissions. How are they determining that? It would be beneficial to see in future proposals a more accurate accounting of how much the proposed project would reduce carbon emissions especially if you include input costs of growing the product, harvesting and taking the product to the refiners. How much do you really gain?

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 Project Costs: \$68,934,121; Amount Requested: \$34,467,061 (Loan)

The purpose of the proposed project is to 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.

Scores:	Technical Reviewer 1	264	
	Technical Reviewer 2	234	
	Technical Reviewer 3	249	
	Average		249

Technical Reviewers' Comments

- All three Reviewers rated the project to produce bioethanol at near-zero emission of CO₂ through underground sequestration as technically good. The objectives and goals were very to exceptionally clear and in line with the CSEA funding mission. This project has also already been awarded a \$3M grant during the Grant Round 1 process.
- The additional \$34.467M loan request 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 included the earlier grant (\$3M) awarded and prior project spend, the maximum loan amount that could be considered is \$27.662M.
- Two Reviewers thought the project would most likely significantly impact the State's economy, while the other Reviewer thought it would likely impact the economy. Carbon capture and storage jobs would be added in addition to temporary construction jobs, CO₂ emissions would be reduced, and competitiveness of the existing facility would be improved while an overall corn premium maintained locally.
- Two Reviewers indicated the quality and clarity of the methodology used in the proposal was above average while the other Reviewer indicated an average score. The team performed due diligence on the technical and commercial viability and the steps were well laid out. The lower score was lower due to the length of the proposal at 171 pages.
- The Reviewers scored the facilities and equipment for the commercialization strategy as notably good to exceptional. The capture, compression and dehydration system is made up of commercially proven equipment. The storage is more challenging on the eastern edges of the basin, but the team performed studies to understand their needs.
- Two Reviewers thought the proposed budget was comprehensive and most likely sufficient to accomplish the work in the provided timetable. One Reviewer thought it was likely sufficient and thought the project management tools relating objectives to goals to a statement of work with costs and time could have been more comprehensive.
- Two Reviewers indicated the strategic partnerships were better than average while one Reviewer said they were exceptional for both the short- and long-term plans to be successful. The carbon capture and equipment design companies are large, proven firms and the subsurface expertise is being provided by a regional expert.
- All Reviewers believe the project will most likely achieve its technical and market goals. The budget and plan to design and construct the CO₂ sequestration system was realistic although the timeline may be just a little ambitious.
- The scientific and/or technical contribution to address goals of impacting technology varied from significant to extremely significant. The impact of CO₂ sequestration is important to

- North Dakota. The major scientific contribution, however, 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.
- Two Reviewers rated the project management plan as adequate, with the other Reviewer rating the project as exceptionally good. The management plan was laid out adequately, but the proposal was lacking some generally accepted tools for displaying budget, participants, and milestones but a more detailed plan is being created.
 - Two Reviewers indicated the background and experience of the project principal's technical qualifications and competence as exceptional. The other Reviewer noted the team has the better than average qualifications necessary to complete the project. The expertise in the project team (Carbon America, MAG, Fagen, Salof, and EERC) is experienced in biofuels technology and their respective areas.
 - Overall:
 - One Reviewer indicated the proposed project of a CO₂ sequestration system to integrate with the Blue Flint biorefinery will provide a competitive advantage in a populated bioethanol industry when producing low-carbon-intensive bioethanol. The applicants have formed a very strong team of expertise in their respective industries. The proposal is strong and should be considered for acceptance by NDIC. A key to success is the regulatory paperwork needed to fulfill California Air Resource Board low-carbon fuel standard which will provide the necessary market for low-carbon-intensive bioethanol products.
 - One Reviewer thought the application was technically sound and has merit and could be an asset for North Dakota. The uniqueness of the proposal was the combination of the players more importantly the eastern expansion of CO₂ sequestration capable formations within the state. This reviewer would have preferred the use of more graphs, charts, and tables for displaying relevant information rather than the lengthy verbiage but would support funding.
 - One Reviewer believes the proposal would further reduce the carbon footprint of the ethanol plant while adding carbon capture and storage jobs. The facility's competitiveness would be strengthened and a price premium provided that should insure reliable demand for North Dakota corn growers. Even though the timeline for the project is tight, the technology is sound with proven equipment in the capture system and storage side. This Reviewer noted the use of CSEA grants as match and it should be considered when determining the loan amount.

Technical Committee discussion included:

- Prefers this as a loan application because there is a like facility already operating in the state.
- There is a lot of geological information that can be gained because of the location of the site. This information would be valuable and after more drilling is completed could leverage itself into a much larger opportunity for the state. It was noted that there were problems with the well that was already drilled in this area that will need to be corrected.
- Mr. Helms stated that his office has met with the Carbon America personnel and they found them to have the capacity to move one of these projects forward and working with the EERC that they have the right scientists and staff working on this project. Strong partnerships have been established.
- This is not a resolved science yet in many people's minds so additional information regarding the safety of sequestration will be useful in the future.
- It was noted that during the last legislative session the entire ethanol industry received a total of \$21 million to pay down loans held at the Bank.

- It is anticipated that all ethanol plants will be doing some level of carbon sequestration.

C-02-05 – Internal Combustion Engine Carbon Capture and Sequestration; Submitted by Enerplus Resources (USA) Corporation; Total Project Costs: \$18,100,000; Amount Requested: \$9,055,000 (grant)

The project purpose 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.

Scores:	Technical Reviewer 1	186	
	Technical Reviewer 2	219	
	Technical Reviewer 3	231	
	Average		212

Technical Reviewers' Comments

- Two Reviewers rated the project to capture carbon from small-scale industrial sources in the oil and gas industry and sequester those emissions as technically good. One Reviewer rated the project as less than fair. The objectives and goals were clear to very clear and proposed a three-phased approach which would provide a platform to test a developmental technology in a relevant environment.
- The additional \$9.055M grant request is 50% of the project (\$18.11M) costs. 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.
- All Reviewers thought the project would likely impact the State's economy. The technology should reduce the CO2 impact to greater than 250kt/yr. at the four Gemini facilities. Longer term, a greater benefit to ND might take place if other producers adopt the technology.
- Two Reviewers indicated the quality and clarity of the methodology used in the proposal was above average while the other Reviewer indicated an average score. The methodology is divided into three well-defined stages aimed at demonstrating the CCS hub technology. The stages show a logical set of tasks that lead to a demonstration that will prove the scalability. Additional clearly defined metrics would be helpful to ensure prudent use of CSEA funds.
- The Reviewers scored the facilities and equipment available as average to notably good. There was a reasonable breakdown of project costs and an acknowledgement of supply chain issues, but the technology provider has a portable, salable carbon capture system that uses proprietary technology to collect exhaust gas emitted from stationary internal combustion engines.
- Two Reviewers thought the proposed budget was comprehensive and likely sufficient to accomplish the work in the provided timetable. One Reviewer thought it was most likely sufficient and the major project costs and allocation of costs seemed appropriate to the tasks described.
- Two Reviewers indicated the strategic partnerships were better than average while one Reviewer said they were adequate for both the short- and long-term plans to be successful. The critical aspects of the work including system design, oil field operations, well design and installation, and CO2 capture technology are covered and many have extensive experience.
- Two Reviewers believe the project will only possibly achieve its technical and market goals. The economics of small-scale carbon capture and trucked transport and disposal are likely

- challenging and not many details were provided that would insure an economically viable approach. The other Reviewer indicated a likely achievable.
- Two Reviewers rated the scientific and/or technical contribution of the proposed work as significant while one Reviewer indicated a very significant rating. The proposed (MTR) membrane technology has been tested at DOE Alabama facility for 10 years and CO₂ injection has been proven as close as Weyburn, Canada for a longer time. If the technology can be applied to a significant portion of ND, the result would be lower carbon emissions, continued oil production and more jobs.
 - Two Reviewers rated the project management plan as notably good, with the other Reviewer rating the project as adequate. The proposed project schedule clearly described technical task duration, sequencing and reporting. Some additional detail regarding task dependencies and milestones would be beneficial.
 - Two Reviewers indicated the background and experience of the project principal's technical qualifications and competence as better than average. The other Reviewer noted the team has adequate qualifications necessary to complete the project. The expertise in petroleum operations, engineering, finance, environmental engineering, and government and regulatory affairs were noted.
 - Overall:
 - One Reviewer agrees the capture of CO₂ from well-head generators could be significant if applied to all ND sites. The reviewer was not clear why Phase 1 is necessary if the MTR membrane technology has already been proven and is concerned with the cost structure necessary with aggregating CO₂ and transporting to injection wells. Although important with regards to emission reduction, jobs and oil production, concern exists with the economic benefit.
 - One Reviewer thought the proposed project provides an opportunity to evaluate and test industrial scale carbon capture from gas generators at a scale that is challenging due to both technology and economics. The proposal did not address the challenges of economic viability at the proposed scale or describe their expectations about how those challenges will be mitigated.
 - One Reviewer believes the project is technically sound, fits well with CSEA objectives and would reduce environmental impacts of energy production. The overall economics need to be evaluated during the project and the project objectives and execution plan are well thought out. The Reviewer also noted the importance of an evaluation of long-term performance of CO₂ capture systems.

Technical Committee discussion included:

- This is a path forward for an oil and gas company to make a difference in their ESG scores. Their focus on carbon capture is great.
- The technology is not that proven off of compressors and internal combustion engines. There is a lot of unproven how feasible it is to do.
- The state shouldn't be drilling a CO₂ storage well for the applicant. That is not advancing the technology for clean sustainable energy. This is an oil and gas company that could easily use the CO₂ in an EOR pilot project.
- The volume that is being proposed for capture is 1/10th of what Red Trail will be capturing and storing. Does not move the needle on carbon capture.
- A project to demonstrate the carbon capture would be good and should be supported—a suggestion that should be made to the applicant.

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: \$4,371,457 (grant)

The project is to 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.

Scores:	Technical Reviewer 1	270	
	Technical Reviewer 2	252	
	Technical Reviewer 3	210	
	Average		244

Technical Reviewers' Comments

- Two Reviewers scored the project as technically good with 1 Reviewer scoring it as fair. All Reviewers noted the goals and objectives of development of a waste-to-energy gasification technology into a 25 ton/day demonstration facility that converts organic waste into various forms of energy as clearly aligning with the CSEA funding goals.
- The \$5.371457M grant request is about 50% of the project (\$10.985489M) costs. The applicant commits to matching the State's funding with investments from Trilogy Financial Group, Tri-Steel Manufacturing, and other project partners.
- Two Reviewers thought the project would most likely significantly impact the state's economy through the agricultural industry and community impact of addressing solid waste issues. Additionally, the addition of new jobs and manufacturing within the state would be beneficial. The other Reviewer thought it would likely impact the economy but not in the near term.
- All Reviewers indicated the quality and clarity of the methodology to be above average, very detailed and well analyzed. Building off the bench tested pilot scale system has improved the previously existing designs and a commercial scale will allow future customers to see before they buy.
- The Reviewers scored the facilities currently available and the equipment to be designed in the proposal as notably to exceptionally good. This is largely because the system has been tested/validated through previous development and the demonstration sized system will be critical for demonstrating commercial viability with additional feedstock materials.
- Two Reviewers rated the budget as comprehensive and most likely sufficient to accomplish the outlined work and timetable due to the team established and detail. The other Reviewer felt the gasification technology development work was sufficient but had concerns with the other goals of producing drop-in-fuels and hydrogen within the same timeframe.
- Reviewer ratings varied from adequate to exceptional on strategic partnerships. All felt that assembled team had the skills required to be successful, but one highlighted the fact that all of cost share required has been identified but not committed at the time of submission and should be finalized prior to funding.
- The technical and market goals ranged from possibly achievable to most likely achievable. The lowest ranking identified the drop-in-fuels and hydrogen objectives as not likely achievable in the 2.5-year timeframe. All indicated that with a successful demonstration of the gasification technology the commercial and market goals were likely achievable. The timetable could also be impacted by supply chain disruption as identified by one Reviewer.

- All Reviewers rated the scientific and technical contribution of the project as very significant in impacting technologies used in North Dakota's energy industry, especially from the point of view of resource utilization and environmental sustainability. At the same time, it will provide significant benefits to both local governments and the agricultural industry.
- All Reviewers rated the project management plan as notably to exceptionally good for partnership development and a well-defined path forward. One Reviewer suggested go/no go decision point after permits are required and a contingency be established in the grant contract.
- Two Reviewers indicated the background and experience of the project principal's technical qualifications and competence as exceptional. The other Reviewer noted it as better than average and especially competent in the gasification technology. The team assembled also has experience in manufacturing and project management as well as the technical expertise.
- Overall:
 - One Reviewer noted this proposal is one of the most complete he's ever witnessed; carefully constructed and completed. He was interested in the following questions.
 - What did SET (inventor, patent owner) learn from the previous five ton/day biomass testing and what difference is expected in scaleup?
 - Has the challenge of getting sponsors and investors to commercialize the technology changed since the last attempt and how do you plan to overcome?Regardless, the Reviewer believes this project is a sound investment due to the team assembled and business proposal.
 - One Reviewer indicates the proposed work has the potential to significantly benefit the state and will have a positive impact on the economy including activity and jobs if successful. With finalization of some of the cost share needs and some go/no go decision points in the contract, the Reviewer would support moving forward with this project.
 - One Reviewer believes converting waste streams into renewable forms of energy would contribute to the North Dakota energy industry and the environmental sustainability and that it is a good project that largely aligns with the CSEA funding mission. Some additional milestone development could be accomplished to ensure significance to CSEA funding missions, but it is recommended that the proposal be funded if funds are available.

It was noted that this project could possibly be considered for funding from the hydrogen grant dollars.

Technical Discussion included:

- It was clarified that the waste that would be used is commercial waste, railroad ties, tires, agricultural waste.
- The advantage of the technology is that it can take high moisture waste or waste that other high temperature systems have trouble handling.
- The EERC has worked on this over the years. The applicant does not have a large enough system to show that it would work.
- There was only one North Dakota location identified to use the product. Tri-Steel would construct the units.
- Mr. Erickson pointed out that what is being proposed does not fit under the hydrogen funding.
- There are some questions about what would be gained from this proposal.

C-02-07 – Green Hydrogen Generation and Storage System; Submitted by BWR Innovations LLC; Total Project Costs: \$16,400,000; Amount Requested: \$5,764,000 (grant)

The project purpose is to utilize BWR's 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 capture 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.

Scores:	Technical Reviewer 1	159	
	Technical Reviewer 2	216	
	Technical Reviewer 3	210	
	Average		195

Technical Reviewers' Comments

- The Reviewers' technical ratings ranged from good to questionable for the project that couples renewable resources with hydrogen storage and optimizes the connection to the existing grid. All Reviewers rated the proposal goals and objectives as clear in their clarity and consistency with the CSEA goals for reducing environmental impacts and increasing energy sustainability, however, one Reviewer thought the project was not as much of a demonstration of commercial viability but more of a build out of the technology.
- The additional \$5.764M grant request is 35% of the project (\$16.4M) costs. 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.
- Two Reviewers thought the project would likely impact the State's economy, while one Reviewer thought the impact would be small. Making renewable energy more reliable is beneficial but with most of the materials and inputs being purchased from other vendors, most of the major lasting impact will be on the manufacturing of the units inside the state which may be longer term. Additionally, a firm commitment of the 20-unit installations within the state would be beneficial.
- Two Reviewers indicated the quality and clarity of the methodology used in the proposal was average while the other Reviewer indicated an above average score. This is a straightforward purchase-build-deliver project based essentially around assembling established components into a modular system. The proposed uniqueness is in the energy use optimization system and associated telemetry. Additional detail associated with the hydrogen tank and compressor operation would have helped one Reviewer.
- The Reviewers scored the facilities and equipment available as adequate to notably good. The equipment included proven subsystems and a team with the skills required for a successful project. The facilities were sufficient, but a better identification and description of the sites' operation is necessary to fully gauge commercial viability.
- All Reviewers thought the proposed budget was comprehensive and likely sufficient to accomplish the work in the provided timetable. Comments included a concern that the majority of project funds are dependent on upfront sales of the systems and there was some question on ownership of the final equipment. One Reviewer suggested a limit to the number of demonstration sites or potentially consideration of a combination of grant and loan for the proposal.
- The Reviewers ranking of the strategic partnerships ranged from limited to better than average. Valuable partnerships with industry leaders were noted that should lead to successfully

- completing the demonstration of the first units. More commitments for purchase and the inclusion of an existing grid operator would have strengthened the score.
- Two Reviewers believe the project will only possibly achieve its technical and market goals. The other Reviewer indicated a likely achievable score. The Gantt charts indicate an aggressive but feasible timeline. More detail could have been provided for timing of when each of the 20 installations come online. Concerns were also noted on continued development and improvement of competitive systems and how they might impact penetration into the market and possible supplier delays.
 - The Reviewers ratings of the scientific and/or technical contribution of the proposed work ranged from small to very significant. The proposed technology package is comprised of known elements with a focus on integration and assembly coupled to optimization software. One Reviewer felt the proposed project was not transformative but rather integrative in nature while another believed the demonstration would be important and an impactful concept to decarbonization. One Reviewer would have liked to see more economic data with competitors and the involvement of a grid operator.
 - Two Reviewers rated the project management plan as notably good, with the other Reviewer rating the project as adequate. The project management plan is well thought out with goals that appear reasonable. The partner connections and identified potential future partner are strong and the milestone chart is ambitious but well-defined. One Reviewer would have liked to see more of a commitment to purchase units as opposed to only providing design input.
 - Two Reviewers indicated the background and experience of the project principal's technical qualifications and competence as better than average. The other Reviewer noted the team as limited. The team was well qualified for the technology development and deployment aspects of the project and their principal component suppliers reputable and experienced. They have a strong history of successful entrepreneurship and innovation in the area, however the one low score was highlighted due to the perceived limited knowledge based on comments made with regard to other competitive technologies in this arena, existing and past projects on similar technologies, and the overall electric power utility industry.
 - Overall:
 - One Reviewer believes the project would be valuable from a demonstration standpoint, but the overall economic benefit seems small. Technically the project is sound but some gaps in specifically how the funding would be used, how the project would ultimately look, the cost-sharing components and funds-gathering from potential projects, and what the ultimate success of the project would be.
 - One Reviewer thought the proposed work offer an interesting potential system to overcome one major problem with large scale integration of renewable energy that is not available "on demand". Weaknesses included the lack of economic data from work to date on the micro-grid and the lack of an existing grid operator as a partner. Additionally, this Reviewer questioned the use of a grant for a large demonstration project (20 units) but thought if changes were made to address these concerns, the Reviewer would support work going forward on this technology.
 - One Reviewer believes the project has a great deal of appeal 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. The project should be technically feasible with utilization of known components built into a modular package with the energy optimization software. The primary concerns were with the funding model, return on investment analysis and understanding of competitive technologies. Overall, the project was viewed as technically feasible with concerns as to market viability.

The Technical Committee discussion included:

- In general a cool concept – fuel cells have been just around the corner for many years – not sure about the fuel cell piece of this project.
- The amount of energy that can be stored is limited – would require a dual fuel.
- Should start with few demonstrations rather than 20 sites.
- EERC ran a similar type of project 15 to 20 years ago using wind and the costs were prohibitive. Their technology appears to produce higher pressurized hydrogen to start with which improves the economics of this concept.
- The scale for using solar would be very extensive in North Dakota.
- Not sure this is the solution for a micro grid.

C-02-09 – Project Tundra; Submitted by Minnkota Power Cooperative; Total Project Costs: \$1,450,000,000; Amount Requested \$150,000,000 (loan

The project goal 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.

Scores:	Technical Reviewer 1	270	
	Technical Reviewer 2	285	
	Average		278

Technical Reviewers’ Comments

- The Reviewers rated the project to demonstrate post combustion carbon capture (PCCC) and storage in North Dakota, preserving the use of lignite for electrical power generation and ensuring reliable power while reducing emissions as good. The Reviewers rated the proposal goals and objectives as very to exceptionally clear in their clarity and consistency with the CSEA goals for reducing environmental impacts and increasing energy sustainability. The project appeared to be an ideal fit.
- The \$150M loan request is only 10% of the project (\$1450M) costs 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 Reviewers view of the projects near term impact on the state ranged from most likely to significant impact on the economy. Besides the significant impact of the facilities direct and indirect employment and equally important benefit of maintain affordable reliable electricity was noted that impacts our economy and provides economic competitiveness for many industries. There is also an impact from near term construction where detail was not provided.
- Both Reviewers indicated the quality and clarity of the methodology used in the proposal was above average and in place for de-risking the project as they proceed. The proposal contains detailed information from the business development and tax departments but could be strengthened by additional information concerning the engineering, technical and scientific aspects of the project as it is further developed.
- The Reviewers scored the facilities and equipment available 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.
- Both Reviewers thought the proposed budget was comprehensive and most likely sufficient to accomplish the work in the provided timetable. The budget is the result of extensive upstream efforts including a FEED study and contains sufficient time and cost budgets for this stage of the project.
 - The Reviewers ranking of the strategic partnerships ranged from better than average to exceptional. The team includes well known experts in the field of carbon management and all aspects of the commercialization effort.
 - Both Reviewers believe the project will most likely achieve its technical and market goals. The other Reviewer indicated a likely achievable score. The team has done everything in a stepwise organized way to maximize the ability to meet the technical and market goals.
 - Both Reviewers ranked the scientific and/or technical contribution of the proposed work to be extremely significant in addressing the CSEA goals and needs for the North Dakota energy industries. The project would demonstrate both the capture and storage technology at a 4M tons per year lignite facility. This would provide a model for capture at other utilities and provide learnings for storage of CO₂ from any source in the region.
 - The Reviewers rated the project management plan as adequate to notably good. The project management plan is well thought out with the team needed to execute it. One Reviewer noted that the project management tools usually identified with a project of this scope are minimal or simply not included.
 - The Reviewers indicated the background and experience of the project principal's technical qualifications and competence as better than average to exceptional. The team combined experts in the capture and storage aspects, engineering, planning, financing with world experts in other various aspects of the project to create a very strong team.
 - Overall:
 - One Reviewer believes the strength of this project is the need. The project addresses a singularly significant issue for the industry and state. The concern for CO₂ emissions is of the utmost importance. This PCCC project can provide a path to remove the CO₂ from primary position of threat to the industry and state. The project is strengthened by the presence of the industry team. Inclusion of more management planning tools including charts and graphs would only further strengthen the proposal.
 - One Reviewer thought the project was 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. 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 employment as well. An equally important benefit is maintaining the affordable reliable electricity that drives our economy and provide economic competitiveness. 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.

A short break was taken at this time.

Mr. Kringstad joined the meeting at this time.

C-02-01 – Flare Mitigation/Elimination through Wellsite Energy Recovery and Advanced Computing; Submitted by Digital Stream Energy, Inc.; Total Project Costs: \$58,000,000; Amount Requested: \$15,000,000 (loan)

The project purpose is to expand 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. The applicant would 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.

Scores:	Technical Reviewer 1	174	
	Technical Reviewer 2	207	
	Technical Reviewer 3	210	
	Average		197

Technical Reviewers' Comments

- Two Reviewers scored the project as technically fair with 1 Reviewer scoring it as less than fair. All Reviewers noted the goals and objectives of applying a technology that will utilize gas that would otherwise be flared at well sites to produce power for use on site in portable datacenters as clear to exceptionally clear and that the project would reduce emissions and has the potential to increase sustainability of the oil and gas industry.
- The \$15M loan request is about 25% of the project (\$58M) costs. The applicants' intention is to expedite purchase and deployment of equipment with match coming from company cash flow and investors.
- The Reviewers ranged from a small impact to most likely significant impact to the state. The smaller impact comments were based on the funds will only be used to expand an existing business that the applicant is already engaged in. While the other reviewers noted the technology can be quickly deployed and have an immediate impact on the stranded gas while increasing jobs.
- Two Reviewers indicated the quality and clarity of the methodology to be average while the other marked the proposal below average. The proposal could have provided more budget detail and a better-defined task structure to describe the unique approach.
- Two Reviewers noted the facilities and equipment available to be notably good, already piloted with a well-defined commercialization strategy. The other Reviewer marked the project adequate with a concern if this is more of an expansion of an existing business and not a new technology.
- The proposed budget and timeline were likely sufficient to accomplish the work but lacked adequate detail to further assess the appropriateness of funding to accomplish what was proposed.
- Reviewer ratings varied from adequate to better than average on strategic partnerships. The applicant has been operating in the Williston Basin, has conducted technology testing with producers and has strategic partnerships with investors, producers, and equipment suppliers.
- The technical and market goals are likely achievable with the expertise and experiences of the project team. The proposal timeline lack detail but lays out a deployment of equipment that seems reasonable.
- Two Reviewers rated the scientific and technical contribution of the project as very significant indicating the approach to gas management and treatment at the well head as novel and representing a comprehensive approach to reducing stranded gas emissions. The other

- Reviewer noted the contribution as small since the project is an expansion of an existing business.
- All Reviewers rated the project management plan as adequate to accomplish project goals. The partner roles are well defined and adequate, but more details associated with the long lead time items required, KPIs and timeline milestones would have resulted in a higher score.
 - The project principals background scoring ranged from adequate to better than average. The project team members are well qualified, have the technical and financial expertise to carry out the project and have oil and gas experience in the Bakken.
 - Overall:
 - Two Reviewers noted the proposed technology utilizing flare gas to generate power that would otherwise have been lost to flare as a novel and wholistic approach to well site gas emissions and energy recovery. The project is aggressive and will capture an estimated 3 BCF of gas in 2022 while producing additional jobs in ND. Both thought the approach to be feasible, but the application lacked sufficient detail associated with milestones, budget, and timeline.
 - 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 Review Committee discussion included:

- Fundamentally goes back to a project proposed by Blaise Energy – capturing the natural gas and converting it to electricity – capturing the volumes that are needed and the chemistry to make that work. Have seen this type of process used in the oil field previously. The economics are not as attractive to putting the electricity that is generated back on the grid—there are a number of opportunities.
- This is a fairly well proven technology – there are companies already doing this work.
- The applicant used the entire vented flaring stream in their calculations. The fact is that only 1% of our gas is truly stranded and is an application for this type of technology. Most of what is flared only 1% is stranded and not connected to a pipeline. Potential impact of applying this to 8% of North Dakota's natural gas production is way overstated
- Research at a scale where it actually captures that last little bit of emissions is needed – go after the tank vapors or the very low-pressure emissions. Tank vapors are continuing to be flared and that is where research should be focused.
- The Legislature has also provided a \$72,000 tax incentive for this work.
- DEQ has had some recent presentations on zero emission sites.

It was moved by Mr. Erickson and seconded by Mr. Glatt 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 Technical Committee enter into executive session for the purpose of considering Clean Sustainable Energy Authority confidential information. On a roll call vote Erickson, Garman, Glatt, Helms, Kringstad, Retterath, Steinwand, Weeda voted aye, no one voted nay. The motion carried unanimously.

Lt. Governor Sanford stated The Clean Sustainable Energy Authority Technical Committee 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. I remind those present in the executive session that the discussion must be limited to the announced purpose which is anticipated to last approximately 1 hour. The executive session will begin at 2:45 p.m.

During Executive Session the CSEA Technical Committee met with the following individuals being present:

Lt. Governor Sanford
Tom Erickson, CSEA member
Richard Garman, CSEA member (representing Commerce Department)
Dave Glatt, CSEA member
Lynn Helms, CSEA member
Justin Kringstad, CSEA member
Rachel Retterath, CSEA member
Todd Steinwand, CSEA member
Kelvin Hullet, CSEA member designee for Mr. Steinwand
John Weeda, CSEA member
Al Anderson CSEA Director
Karlene Fine, Industrial Commission staff
Katie Haarsager, Industrial Commission staff
Jim Martel, Industrial Commission staff

During the Executive Session the CSEA Technical Committee took up the following agenda items:

Review of Confidential Information
Report on Economic Review Results
Discussion regarding the confidential information and completion of scoring sheets

Lt. Governor Sanford stated the executive session has ended at 3:42 p.m. and the CSEA Technical Committee reconvened in open session.

C-02-01 – Flare Mitigation/Elimination through Wellsite Energy Recovery and Advanced Computing; Submitted by Digital Stream Energy, Inc.; Total Project Costs: \$58,000,000; Amount Requested: \$15,000,000 (loan)

Mr. Anderson stated the Independent Technical Reviewers had 2 fairs; 1 questionable; Bank of North Dakota review was that the project was economically feasible. He reviewed the information from the CSEA Technical Committee Scoring Sheets as follows noting that seven Technical Committee members stated the project was feasible and one stated it was not feasible:

Erickson:	43 Feasible
Glatt:	29 Feasible
Helms:	35 with conditions
Kringstad:	31 Feasible
Garman:	33 with conditions
Retterath:	40 Feasible
Steinwand:	28 with conditions
Weeda:	33 Not Feasible

Average 34 feasible; 33 not feasible

It was moved by Mr. Steinwand and seconded by Ms. Retterath that the CSEA Technical Committee determines that the Flare Mitigation/Elimination through Wellsite Energy Recovery and Advanced Computing Inc. project submitted by Digital Stream Energy is feasible and recommend do not fund. On a roll call vote, Erickson, Garman, Glatt, Helms, Kringstad, Retterath, Steinwand and Weeda voted aye. No one voted no. The motion carried unanimously. It was stated that the reason for the

motion was that there are several crypto mining facilities already active in the state using this type of technology.

C-02-02 –Hydroil McKenzie #1 Slurry Fracture Injection TENOLRM Disposal Facility; Submitted by Hydroil Solutions, LLC; Total Project Costs: \$13,852,914; Amount Requested \$2.5 million (grant.) Mr. Anderson stated the Independent Technical Reviewers had 1 Good, 1 Fair and 1 Questionable; Bank of North Dakota review was that the project was economically feasible. He reviewed the information from the CSEA Technical Committee Scoring Sheets as follows noting that there were 5 Technical Committee members stating the project was feasible and 3 indicating that the project was not feasible:

Erickson:	33 not feasible
Glatt:	28 with conditions
Helms:	31 not feasible
Kringstad:	36
Garman:	31 with conditions
Retterath:	37
Steinwand:	30 with conditions
Weeda:	23 not feasible

Average for feasible - 32 – Average for not feasible - 29

It was moved by Mr. Helms and seconded by Mr. Weeda that the Hydroil Solutions project is determined to be not feasible and recommend do not fund. On a roll call vote, Erickson, Kringstad, Garman, Glatt, Weeda, Helms, Retterath and Steinwand voted aye. No one voted no. The motion carried unanimously. It was stated that the reason for the motion was their location and permitting difficulties.

C-02-03 – SAFuels X; Submitted by AIC Energy Corporation; Total Project Costs \$357,000,000; Request for \$10,000,000 (Grant); \$25,000,000 (Loan). Mr. Anderson noted that the Independent Technical Reviewers had 3 Good and the Bank of North Dakota had determined the project was economically feasible. He reviewed the information from the CSEA Technical Committee Scoring Sheets as follows noting that all 8 Technical Committee members stated the project was feasible:

Erickson:	33 with conditions.
Glatt:	31
Helms:	38 with conditions
Kringstad:	34
Garman:	36 with conditions
Retterath:	36
Steinwand:	32 with conditions
Weeda:	30 with conditions

Average 34 feasible

It was moved by Mr. Erickson and seconded by Mr. Kringstad that the CSEA Technical Committee determines that the SAFuels X project submitted by AIC Energy Corporation is feasible and recommends consider funding 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. On a roll call vote, Erickson, Garman, Glatt, Helms, Kringstad, Retterath, Steinwand and Weeda vote aye. No one voted no. 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 Project

Costs: \$68,934,121; Amount Requested: \$34,467,061 (Loan). Mr. Anderson stated the Independent Technical Reviewers had 3 Good; Bank of North Dakota review was that the project was economically feasible. He reviewed the information from the CSEA Technical Committee Scoring Sheets as follows noting that 6 Technical Committee members stated the project was feasible and 2 members abstained:

Erickson:	abstained
Glatt:	35
Helms:	40
Kringstad:	35
Garman:	39
Retterath:	abstained
Steinwand:	47
Weeda:	46

Average 40

It was moved by Mr. Weeda and seconded by Mr. Garman that the CSEA Technical Committee determines that the Commercial Deployment of Carbon Dioxide Capture & Geological Sequestration in McLean County project submitted by Carbon America Developments, LLC and Midwest AgEnergy Group is feasible and recommends fund. On a roll call vote, Garman, Glatt, Helms, Kringstad and Weeda voted aye and Steinwand voted no. Erickson and Retterath abstained. The motion carried. In response to a question Mr. Steinwand indicated that he would have preferred funding at a lower funding level.

C-02-05 – Internal Combustion Engine Carbon Capture and Sequestration; Submitted by Enerplus Resources (USA) Corporation; Total Project Costs: \$18,100,000; Amount Requested: \$9,055,000 (grant). Mr. Anderson stated the Independent Technical Reviewers had 2 Good and 1 Questionable; Bank of North Dakota review was that the project was economically feasible. He reviewed the information from the CSEA Technical Committee Scoring Sheets as follows noting that all eight of the Technical Committee members stated the project was feasible:

Erickson:	35 with conditions
Glatt:	34 with conditions
Helms:	40 with conditions
Kringstad:	25
Garman:	40 with conditions
Retterath:	38
Steinwand:	33 with conditions
Weeda:	30 with conditions

Average 35

It was moved by Mr. Helms and seconded by Mr. Kringstad that the CSEA Technical Committee determines that the Internal Combustion Engine Carbon Capture and Sequestration project submitted by Enerplus Resources (USA) Corporation is feasible and recommends funding with the condition that the funding be used only for the carbon capture portion of the project – not for the drilling of the well. On a roll call vote, Erickson, Garman, Glatt, Helms, Kringstad, Retterath, Steinwand and Weeda voted aye. No one voted no. The motion carried unanimously.

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: \$4,371,457 (grant). Mr. Anderson stated the Independent Technical Reviewers had 2 Good and 1 Fair; Bank of North Dakota review was that the project was economically feasible. He reviewed the information from the CSEA

Technical Committee Scoring Sheets as follows noting that 7 Technical Committee members stated the project was feasible and one Technical Member stated it was not feasible:

Erickson:	33 with conditions
Glatt:	25
Helms:	37 with conditions
Kringstad:	25
Garman:	35 with conditions
Retterath:	41
Steinwand:	33
Weeda:	23 Not Feasible

Average 33 for feasible; Average 23 for not feasible

It was moved by Mr. Erickson and seconded by Mr. Steinwand that the CSEA Technical Committee determines that the Accelerating the Waste-to-Energy Commercialization Pathway for the Sandwich Gasifier project submitted by Dakota Green Power 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. On a roll call vote Erickson, Garman, Glatt, Helms, Kringstad, Retterath, Steinwand and Weeda voted aye. No one voted no. The motion carried unanimously.

C-02-07 – Green Hydrogen Generation and Storage System; Submitted by BWR Innovations LLC; Total Project Costs: \$16,400,000; Amount Requested: \$5,764,000 (grant). Mr. Anderson stated the Independent Technical Reviewers had 1 Good, 1 Fair and 1 Questionable; Bank of North Dakota review was that the project was economically feasible. He reviewed the information from the CSEA Technical Committee Scoring Sheets as follows noting that all 8 Technical Committee members stated the project was feasible

Erickson:	38 with conditions.
Glatt:	28
Helms:	38 with conditions
Kringstad:	28
Garman:	36 with conditions
Retterath:	38
Steinwand:	33 with conditions
Weeda:	37 with conditions

Average 34.5

It was moved by Mr. Erickson and seconded by Mr. Kringstad that the CSEA Technical Committee determines that the Green Hydrogen Generation and Storage System submitted by BWR Innovations LLC 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. On a roll call vote Erickson, Garman, Glatt, Helms, Kringstad, Retterath, Steinwand and Weeda voted aye. No one voted no. The motion carried unanimously.

C-02-09 – Project Tundra; Submitted by Minnkota Power Cooperative; Total Project Costs: \$1,450,000,000; Amount Requested \$150,000,000 (loan). Mr. Anderson stated the Independent Technical Reviewers had 2 Good; Bank of North Dakota review was that the project was economically feasible. He reviewed the information from the CSEA Technical Committee Scoring Sheets as follows noting that 7 Technical Committee members stated the project was feasible and 1 member abstained:

Erickson:	Abstained
Glatt:	44
Helms:	43

Kringstad:	38
Garman:	44
Retterath:	48
Steinwand:	44
Weeda:	46

Average 44

It was moved by Mr. Steinwand and seconded by Ms. Retterath that the CSEA Technical Committee determines that the Project Tundra project submitted by Minnkota Power Cooperative is feasible and recommends funding. On a roll call vote, Garman, Glatt, Helms, Kringstad, Retterath, Steinwand and Weeda voted aye. No one voted no. Mr. Erickson abstained. The motion carried.

Mr. Anderson thanked the Committee members for their hard work in reviewing the applications and participation in the meeting.

Lt. Governor Sanford stated that the full Clean Sustainable Energy Authority will be meeting on May 16, 2022, in the State Capitol Pioneer Room. At that meeting each of the applicants will have an opportunity to make a presentation to the CSEA.

With no further business, Lt. Governor Sanford thanked the Committee members for their work and the meeting was adjourned at approximately 4:04 p.m.



Lt. Governor Brent Sanford, Chairman