

**State of Iowa
Energy Center Board
Meeting Minutes of June 6, 2023
at IEDA, 1963 Bell Avenue, Suite 200
Helmick Conference Room
Des Moines, Iowa
Or Via Teams Webinar**

Call to order 2:02 p.m.

Board Members Present

Troy DeJooode, Board Chair
Stuart Anderson, Vice Chair
Dan Nickey
Debi Durham
Jennifer Johnson*
Craig Just*
Matt Washburn*

Absent

Scott Stokes
Terry Kouba
Kelcey Brown

Iowa Economic Development Authority Staff Present

Brian Selinger
Amber Buckingham
Stephanie Weisenbach
Lisa Connell
Deanna Triplett
Jeff Geerts
Abbie Christophersen
Betty Hessing
Michelle Cook
Vicky Clinkscates
Terry Roberson*

Iowa Finance Authority Staff Present

Dave Powell*
Samantha Askland*
Tim Morlan*

Others Present

Nick Peterson, Alliant Energy
Ray Klein, ISU, College of Agriculture & Life Sciences
Dr. Anne Kimber, ISU, EPRC
Dr. Ajay Nair, ISU, Department of Horticulture
Dr. Matthew O'Neal, ISU, Plant Pathology, Entomology & Microbiology
Dr. Hongli Feng, ISU, Center for Agriculture and Rural Development
Carolann Jensen, ISU*
Jace Mikels, Iowa Senate Democratic Caucus*
Evan Johnson, Legislative Services Agency*
Brenda Biddle, Iowa Utilities Board*

Ethan Hohenadel, Iowa Association of Electric Cooperatives*

*Participated via Teams

Welcome & Introductions by Board Chair Troy DeJooode

Troy DeJooode welcomed everyone to the June 6th IEC Board meeting.

Roll Call

Betty Hessing did roll call and a quorum was established.

Consideration of February 23, 2023 IEC Board Meeting Minutes

Motion by	Stuart Anderson
Motion	I move approval of the February 23, 2023 minutes as presented.
Second	Dan Nickey
Voice Vote	All ayes in favor. Motion approved.

Fiscal Update – Attachment A

Terry Roberson explained the main account will reflect that slight recapture that we did at the last meeting and also some additional expenditures on the existing contracts. Just over \$11.6M is currently available after all those obligations are taken into account. The new loan program reflects roughly \$3.6M in new loans which were approved at the February meeting. On the old loan program, not a lot has changed—those old receivables that were brought over when IEDA assumed the program, are slowly winding down. They were just under \$6M when they came over in 2017 and now are under a half-a-million.

Terry Roberson stated he would be happy to answer any questions. Dan Nickey asked how much the Grant Committee has available currently and Terry Roberson replied that through the end of May, just over \$11.6M is available.

Competitive Grant Program Update – Attachment B

Amber Buckingham gave an update on the fifth round of grant applications that were launched in February. Thirty-four pre-applications were received and our Grant Committee met at the end of April to review those and eleven were selected to move on to the final application round. Those applications are due June 28th and our committee review is set for late July. We will have Board recommendations for funding at the August Energy Center Board meeting. Amber Buckingham asked if there were any questions; no questions were asked.

Also, in Board Papers is an “Iowa Energy Center Grant Status Report”. Amber Buckingham highlighted a couple noteworthy grants and updates. The first one being the “Grow Energy Workforce Grant”. This is a first in the nation and a first of its kind certification program for high school students. When the students graduate, they have a Building Operator Certificate. Those who do not enter the workforce immediately upon high school graduation, would enter a Community College with college credits. The program has been so successful that they will be continuing the program after the completion of the grant period, which is in November of this year. Another round of graduates is planned in the coming years.

Another project that we have is looking to rejuvenate the lithium-ion in battery cathodes without damaging or destructing the battery materials. The focus is to leave the battery system fully intact and bypassing the need to fully deconstruct the battery during recycling. Some early work has been done showing that refurbishing outcomes are strongly dependent on the battery chemistry, isolating the types of batteries that are the best choice. The goal is to get some successful recycling.

Grant Modification Request for 20-IEC-009 – Attachment C

Amber Buckingham explained this is a second no-cost extension request for 20-IEC-009. We received a request from Iowa State University to extend the agreement end date for project 20-IEC-009 to August 31, 2024. This grant was originally made to Iowa State with an original end date of August 31, 2022. In August of 2022 we did receive a request for a one-year extension which was granted by our staff. They have requested an additional one-year extension due to some issues with getting the information that they needed from their project partners. They feel they need the additional time to analyze that data to fully complete the project. It does not exceed the five-year maximum grant period, so we are still at a four-year grant period. Our recommendation would be to approve the no cost extension.

Chairperson DeJoode asked if there were questions; no questions were asked.

Motion by	Debi Durham
Motion	I move to approve the amendment to 20-IEC-009.
Second	Craig Just
Roll Call	Yes: 7 Abstain: 0

Motion approved.

Grant Modification Request for 20-IEC-016 – Iowa State University – Attachment D

Amber Buckingham stated this is a budget modification for 20-IEC-016. Iowa State University has requested a budget modification amendment for this award, which is entitled “Improve Battery Energy Efficiency via Structural Design and 3D Printing for Electric Vehicles”. The PI has indicated the need to reallocate funds within the approved budget to support costs relevant to the proposed research activities, such as supplies and materials and supporting a post doc in lieu of a graduate student. The PI indicates that there was a shortage of graduate students and the team had to hire a post-doc to complete the work. Additionally, supplies and material costs have increased substantially due to supply chain challenges. They have requested to move \$55,482 from Student Tuition and Domestic Travel to Salaries and Wages, Fringe Benefits and Supplies/Materials. These changes do not impact the overall grant award request, which remains unchanged. As this is over \$10,000, Board approval is necessary and our recommendation would be to approve the amendment.

Chairperson DeJoode asked if there were questions. Dan Nickey stated his concern was with taking money out of travel—would they still be able to meet their goals? Amber Buckingham replied that the travel costs were for meetings,

but they did a lot of their meetings virtually during Covid, so they have some additional funding that they are not going to utilize.

Motion by Dan Nickey
Motion I move to approve the amendment to 20-IEC-016.
Second Stuart Anderson
Roll Call Yes: 7 Abstain: 0
Motion approved.

Energy Infrastructure Revolving Loan Program (EIRLP) – EIRLP Update –
Stephanie Weisenbach stated the Energy Infrastructure Revolving Loan Program has approximately \$11M available. We did receive one application this cycle and we anticipate another application to come for the next cycle, for your consideration at the August 10th Board meeting. The Loan Committee met twice this quarter and at the first meeting we were joined by Director Durham to have a discussion of the program’s evaluation criteria, the interest in the loan program and other programs available for similar projects. We discussed the approach to solar-only projects that are utilizing additional technologies and whether that was what the Committee wanted for the program and we reviewed that there are a variety of federal programs available now from the Department of Energy and USDA—in addition, federal tax credits for solar projects that have some availability for municipal and non-profit entities now. Where that discussion led, was that the solar-only projects do not meet any of those three key criteria for the program to demonstrate that need for assistance in order to deliver the benefits of that type of project. Out of that, we want to make that more evident to future applicants and be able to effectively direct them to additional programs and streamline our review process. We do plan to update the webpage and application information in the near term. We will also be reviewing our Policies and Procedures Handbook annually, to further refine and communicate that approach and also discuss other potential changes as well. Ms. Weisenbach asked if there were questions; no questions were asked.

Energy Infrastructure Revolving Loan Program Loan Application Request – Farmers Electric Cooperative, Kalona – Attachment E

Stephanie Weisenbach explained the one application we received this quarter was from Farmers Electric Cooperative in Kalona. They plan to complete and own a solar project to serve its members. The project will add 998 kW of solar power on a 3.5-acre site. The total project cost is \$1,348,345 and the applicant is requesting a 10-year loan term. They have other financing to cover part of the project, secured through their reserve funds and they are planning to use a Federal Investment Tax Credit and apply for a USDA REAP Grant. Getting into this program’s purpose and eligibility, it would still fit that electricity generation consistent with our definition of energy infrastructure for the three criteria for the program. As discussed recently, it would not be quite fulfilled due to the limited application and the type of technology with other assistance available and being readily adopted across the State.

Stephanie Weisenbach stated the recommendation from the Loan Committee on this application is to deny the application based on not fulfilling the program criteria. The applicant did pledge collateral that is acceptable to the program and financial information was reviewed thoroughly and did not pose any concerns. We will communicate with the Farmers Electric Cooperative regarding

other programs available.

Chairperson DeJoode asked if there were questions; no questions were asked.

Motion by Stuart Anderson
Motion I move to deny the application.
Second Debi Durham
Roll Call Yes: 7 Abstain: 0
Motion approved.

Appointment to Committees and Election of Chair/Vice Chair – Attachment F

Lisa Connell stated she had three action items for the Board. We are making appointments to the Grant Committee and Loan Committee, as well as electing a Chair and Vice Chair. We are doing that based on how the Board looks today. We do have multiple open seats so it is tricky timing, but what we are proposing here is to make those reappointments to the committees, as well as elect your Chair and Vice Chair, subject to reappointment to the Board. Having those open seats, I would expect as we start to fill those open Board seats, we will come back to you with additional recommendations to add on to these committees. Also, your terms will end on April 30th instead of June 30th.

Appointments to Grant Committee

Motion by Debi Durham
Motion I move to reappoint Jennifer Johnson, Dan Nickey and Matt Washburn to a three-person Grant Committee for a term from July 1, 2023 to April 30, 2024, subject to reappointment to the Board.
Second Stuart Anderson
Voice Vote All ayes in favor. Motion approved.

Appointments to Loan Committee

Motion by Dan Nickey
Motion I move to reappoint Stuart Anderson, Kelcey Brown, Troy DeJoode, Scott Stokes and Craig Just to a five-person Loan Committee for a term from July 1, 2023 to April 30, 2024, subject to reappointment to the Board.
Second Debi Durham
Roll Call All ayes in favor. Motion approved.

Election of Board Chair and Vice Chair

Motion by Debi Durham
Motion I move to elect Stuart Anderson to serve as Chair and Craig Just to serve as Vice Chair for a term from July 1, 2023 to April 30, 2024, subject to reappointment to the Board.
Second Dan Nickey
Roll Call All ayes in favor. Motion approved.

Utility-Scale Agrivoltaics Research and Demonstration – Attachment G

Presenters were Nick Peterson, Alliant Energy; Ray Klein, College of Agriculture & Life Sciences, Iowa State University; Dr. Anne Kimber, Electric Power Research Center, Iowa State University; Dr. Ajay Nair, Department of

Horticulture, Iowa State University; and Dr. Matt O’Neal, Department of Plant Pathology, Entomology & Microbiology, Iowa State University; Dr. Hongli Feng, Center for Agriculture and Rural Development, Iowa State University.

The topic was regarding the partnership between Alliant Energy and Iowa State University working on the Alliant Energy Solar Farm at Iowa State University.

Other Business

Troy DeJooode turned it over to Brian Selinger to give Energy Office updates.

Energy Center Office Updates

Brian Selinger introduced our newest Energy Office colleague, Michelle Cook, who is the Energy Data & Reporting Coordinator. In addition to that, she is going to be our Energy Center Board Administrator. Betty Hessing has done a wonderful job of handling the IEC Board Administrator job and we thank her.

Brian Selinger asked Vicky Clinkscales to give an update on the transition of Board Papers to Team Papers. Vicky Clinkscales stated we have been using Board Papers for your Board material, but we will be transitioning to Team Papers after this meeting. Team Papers is by the same developer as Board Papers, just a different application. Instructions will be sent out to all Board members on what you need to do; your log-in will be the same.

Brian Selinger stated we have new federal funding and programming coming IEDA’s way, so periodically when we have new updates, we will share those with the Board. Brian Selinger introduced Stephanie Weisenbach and Jeff Geerts. Stephanie Weisenbach gave a presentation on the Iowa Grid Resilience Fund and Jeff Geerts gave a presentation on the Energy Efficiency and Conservation Block Grant Program. **(Attachment H)**

Public Comment Period No public comments.

Chairperson DeJooode adjourned the meeting.

Adjournment 3:05 p.m.

Respectfully Submitted,
Betty Hessing, IEC Board Administrator

ATTACHMENT A

IEDA				
Financial Report				
Iowa Energy Center				
Fiscal Year 2023				
May 31, 2023				
IEC MAIN ACCT				
				Total
	Admin	Projects		Fund
<u>Revenue</u>				
Cash Balance Forward	275,000	18,561,590		18,836,590
FY21 IUB Transfer	0	0		0
Principal Repayments YTD	0	0		0
Interest Revenue	0	360,112		360,112
Other Revenue YTD	0	0		0
Deappropriations	0	0		0
Transfers	0	0		0
Total Revenue YTD	275,000	18,921,702		19,196,702
<u>Expenses</u>				
Administration YTD	(127,764)	0		(127,764)
Project Payouts YTD	0	(1,763,891)		(1,763,891)
Leg Auth Transfers (18 Acts Ch 1172 Sec 91)				0
Total Expense YTD	(127,764)	(1,763,891)		(1,891,655)
<u>Obligations</u>				
Obligations C/F	0	6,346,261		6,346,261
Current Year Obligations	0	1,051,872		1,051,872
Current Year Rescissions		(141,122)		(141,122)
Current Year Payouts	0	(1,763,891)		(1,763,891)
Balance of Current Year Admin	147,236	0		147,236
Net Obligations YTD	147,236	5,493,120		5,640,356
Balance Available	0	11,664,691		11,664,691

IEDA				
Financial Report				
Iowa Energy Center				
Fiscal Year 2023				
May 31, 2023				
	ENERGY INFRASTRUCTURE REVOLVING LOAN PROGRAM			
				Total
	Admin	Projects		Fund
<u>Revenue</u>				
Cash Balance Forward	250,000	14,157,520		14,407,520
FY21 IUB Transfer	0	0		0
Principal Repayments YTD	0	4,234		4,234
Interest Revenue	0	283,752		283,752
Other Revenue YTD	0	0		0
Deappropriations	0	0		0
Transfers	0	1,174,000		1,174,000
Total Revenue YTD	250,000	15,619,506		15,869,506
<u>Expenses</u>				
Administraton YTD	(26,788)	0		(26,788)
Project Payouts YTD	0	(397,150)		(397,150)
Leg Auth Transfers				0
(18 Acts Ch 1172 Sec 91)				
Total Expense YTD	(26,788)	(397,150)		(423,938)
<u>Obligations</u>				
Obligations C/F	0	236,250		236,250
Current Year Obligations	0	3,753,900		3,753,900
Current Year Rescissions				0
Current Year Payouts	0	(397,150)		(397,150)
Balance of Current Year Admin	223,212	0		223,212
Net Obligations YTD	223,212	3,593,000		3,816,212
Balance Available	0	11,629,356		11,629,356

IEDA					
Financial Report					
Iowa Energy Center					
Fiscal Year 2023					
May 31, 2023					
OLD					
IEC/AEL LOAN ACCT					
			Total		
		Projects	Fund	IEDA	OCT 1 2017
				NOTES REC	NOTES REC
<u>Revenue</u>					
Cash Balance Forward	0	1,174,610	1,174,610	1,044,667	718,354
FY21 IUB Transfer	0	0	0		0
Principal Repayments YTD	0	434,773	434,773	(174,566)	(260,147)
Interest Revenue	0	23,517	23,517		0
Other Revenue YTD	0	0	0		0
Deappropriations	0		0		0
Transfers	0	(1,174,000)	(1,174,000)		0
Total Revenue YTD	0	458,900	458,900	870,101	458,207
<u>Expenses</u>					
Administration YTD	0	0	0		
Project Payouts YTD	0	0	0		
Leg Auth Transfers (18 Acts Ch 1172 Sec 91)			0		
Total Expense YTD	0	0	0		
<u>Obligations</u>					
Obligations C/F	0	348,810	348,810		
Current Year Obligations	0	0	0		
Current Year Rescissions		0	0		
Current Year Payouts	0	0	0		
Balance of Current Year Admin	0	0	0		
Net Obligations YTD	0	348,810	348,810		
Balance Available	0	110,090	110,090		

ATTACHMENT B

INFORMATION

REPORT
IOWA ENERGY CENTER BOARD
JUNE 2023

From: Iowa Energy Center

Subject: Grant Status Report

Background: As part of routine monitoring for Iowa Energy Center grants, principal investigators and their teams are required to submit monthly status updates. These monthly updates are reviewed by the program manager to evaluate the overall project progress and compliance with the stated deliverables.

Principal investigators are also required to attend an annual monitoring session. Between October 2022 and January 2023, the program manager conducted these monitoring sessions with each principal investigator and the appropriate members of their research teams and staff. This report contains updates for each project based on the submitted monthly reports and meetings with the project teams.

Submitted By: Amber Buckingham, Program Manager

Attachments: Grant Status Report Final 2023

Iowa Energy Center Grant Status Report

Introduction

In October 2022, the program manager conducted in-person or desktop monitoring sessions for each Iowa Energy Center Grant. This report contains updates for each project based on the submitted monthly reports and meetings with the project teams

Grant Status Reports

Grant Name: Wind Turbines in Cold Winter: Icing Physics and Novel Strategies for Wind Turbine Icing Mitigation

Grant Recipient: Iowa State University

Award Amount: \$303,587

Project Description: We propose to study wind turbine icing physics and develop novel anti-/de-icing strategies to protect Iowa wind turbines in cold winter

Project Completion Date (projected): 02/28/2024

Description of Work Completed: The team has continued the research work to conduct a comprehensive experimental campaign to characterize the effectiveness of the different ice-/hydro-phobic coatings through a dynamic ice accretion process over a typical wind turbine airfoil model. The team also used rain erosion rig to characterize the surface wettability and ice adhesion strength on an elastic soft material/surface in considering the practical usage of the coatings on turbine blades for wind turbine icing mitigation. The grantee plans to request a no-cost extension

Grant Name: Toolkit for Identification, Characterization, and Energy Evaluation of Low-Efficiency Rural Housing

Grant Recipient: Iowa State University

Award Amount: \$287,354

Project Description: Toolkit to identify least energy efficient homes motivations for efficiency investments.

Project Completion Date (projected): 02/28/2024

Description of Work Completed: Literature review has been completed with a white paper written on the topic. The team received data from CFU, Ames, Algona, and Bloomfield. More recently, this information included smart meter data from Algona and CFU. In Algona, the team matched the assessor's data files to the AMI meter number using the Assessor's online database to fill in any gaps. This provided a sample size of 1,321 single family homes with a full three years of hourly energy usage. Correlations between weekly temperature averages and energy consumption have shown promise. Additionally, the team has begun comparing how EUI can be used as a predictor of peak demand. Initial software analysis on the tools and technologies needed for the development of the Toolkit have started, with the design slated to support web hosting and custom data analytics. The team requested a no-cost extension to continue work on finishing the toolkit

Grant Name: A New Paradigm to Solve Unit Commitment and Optimal Power Flow Problems

Grant Recipient: Iowa State University

Award Amount: \$244,367

Project Description: Dispatch schedules optimized with realistic constraints will lower the cost of a reliable grid

Project Completion Date (projected): 05/31/2024

Description of Work Completed: The project team started coding algorithms using C++ programming language. They have also modeled the network structure of the decision diagrams to find the shortest/longest paths to obtain the optimal solutions. The team also started collecting publicly available test instances that match the problem structure that they are studying, which will be used to test methodology. Once the instances are collected and refined, they will adapt them for our developed algorithms and run experiments. In May 2022, the team lost the post-doc student who was working on the project, which has slowed progress on the project. The team applied to a one-year no cost extension, which was approved by the program manager.

Grant Name: Strategies for Building Soil Carbon and Generating Carbon Negative Energy in Iowa counties

Grant Recipient: Iowa State University

Award Amount: \$280,000

Project Description: The project advances renewable natural gas and power production using Iowa waste resources

Project Completion Date (projected): 05/31/2023

Description of Work Completed: In the last reporting period, we investigated the economic feasibility of the manure derived RNG facility based on the developed Techno-economic model. The economic feasibility of the project investment is quantified based on the Net present Value (NPV) and Internal rate of return (IRR). NPV considers the discounting rate to calculate the present value of the future cash flows and provides information about the total project value in the future. On the other hand, IRR provides information about the possible return on the investment and cash flows to break-even NPV risk analysis is a tool often used to make early-stage project assessments. There has been a delay in work, but the team believes they are still on track to complete the project by 05/31/2023

Grant Name: Distributed Solar and Wind Power Generation Planning in Rural and Underserved Areas

Grant Recipient: Iowa State University

Award Amount: \$243,036

Project Description: Plan for distributed, rural solar and wind units with economics, efficiency, and sustainability.

Project Completion Date (projected): 03/31/2024

Description of Work Completed: The project team worked on the documentation of transmission option valuation models, mathematical modeling, and case studies of land lease contracts, and how to best estimate the cost and price parameters. The team continues to work on the decision model, as well as presenting their work at various conferences and meetings. They also continue to work closely with Iowa Association of Municipal Utilities

Grant Name: Share μ PMUs for Data-Driven Real-Time Distribution Monitoring, Modeling and Analysis

Grant Recipient: Iowa State University

Award Amount: \$290,400

Project Description: Demonstrate the usefulness of μ PMUs in MidAmerican systems and provide big data tools for analysis

Project Completion Date (projected): 08/31/2023

Description of Work Completed: The team has completed installing three GridAnalyzers and its communication at the Alliant Energy site. Two of the three sensors are working well, while one needs to be further tuned. The team is working with PingThings to collect the data from the analyzers and doing training for their platform. The microPMU data has been successfully transmitted, but the team is still working on successfully transmitting the data from the PQube3 sensor. The downloaded data has also been analyzed. The team has requested a second no cost extension, which is awaiting Board approval

Grant Name: Development of Low Cost, Safe, and High-Performance Sodium Batteries for Wind Energy Storage

Grant Recipient: Iowa State University

Award Amount: \$480,656

Project Description: Sodium batteries will be developed to cheaply and safely store wind energy to reduce cost and increase the reliability of electricity.

Project Completion Date (projected): 02/28/2024

Description of Work Completed:

Since we have been able to consistently draw thin-films of our NaPSON $x = 0.2$ GSE, we have continued to work on the electrochemical characterization of this thin-film and comparing it to the bulk, MQ samples. We have been able to test films as thin as fifty μm . One of the ways we test the film was using our EIS equipped with a temperature controller so that we could determine the temperature dependent conductivity for many thin-films to compare to the MQ sample, we have tested the cycling behavior of one 50 μm thin-film and compare it to the bulk MQ sample to determine if there is a significant difference in performance. In our work to assemble and test full cell batteries from these Na GSEs, we must create a composite cathode that consists of four main components, the GSE, carbon, SBR binder, and active material (AM). The AM we are currently using is quite expensive, so we are going to try two new lower cost AMs in order to reduce the cost of our full cell batteries. Full cell testing has been conducted using a composite cathode, sodium metal anode, separated by our glassy solid electrolyte (GSE). Cells have undergone Galvanostatic cycling, electrochemical impedance spectroscopy, and cyclic voltammetry tests, all run at 80 $^{\circ}\text{C}$ to improve conductivity. Additionally, an ionic liquid equal to 10% of the mass of the cathode has been used at the cathode-GSE interface to

improve conduction across the interface Results have shown some level of cycling capability that decreases dramatically after only a single full capacity cycle

Grant Name: Grow Energy Workforce Development Program for Rural Iowa Communities

Grant Recipient: Energy Association of Iowa Schools

Award Amount: \$190,000

Project Description: Workforce energy training and certification for students and building operators in rural SW Iowa.

Project Completion Date (projected): 11/22/2023

Description of Work Completed: EAIS met with SWCC on September 26, 2022, to finalize plans and expectations the Semester 2 Technical Math class and internship Ideas were also shared about how to collaboratively continue to offer BOP in the future after grant funding The students are halfway through our OSHA 10 certification training. Up next is Radon training, then back to BOC Low-Cost Improvements EAIS is reminding MEEA/NEEC of the BOP MOU that was signed, as the signed agreement says the two-year BOP program will count as enough work experience to receive the agreed upon certificate In April, the first set of students completed their coursework and will graduate from high school with their certificates Many of the students indicated that they plan to go into the HVAC field upon graduation and had learned a lot from completing the course

Grant Name: Storing Excess Solar/Wind Electricity as Biorenewable Fuels by Electrocatalytic Conversion of Biomass

Grant Recipient: Iowa State University

Award Amount: \$239,227

Project Description: The project will develop a technology to store the intermittent solar/wind electricity as biofuels.

Project Completion Date (projected): 09/25/2023

Description of Work Completed: The project team worked to design and develop a plasma electrolysis system to convert lignin (corn stover) into fuels that can be used in a fuel cell and to design and develop a fuel cell using the plasma electrolysis lignin as feedstock This meant that the team had to work on lignin oil characterization from plasma treatment, understand the decay in catalytic activities for the lignin oil fuel cell, characterize acid-washed lignin before and after the fuel cell reaction and understand the structural characterization of nickel iron phosphide catalysts before and after fuel cell reaction to reveal decay mechanisms More recently, the project team has conducted work on the hierarchical nickel-iron phosphide nanosheets as a novel anode catalyst for direct lignin fuel cells. The project team is on track to complete the work by the originally agreed to date.

Grant Name: Improve Battery Energy Efficiency via Structural Design and 3D printing for Electric Vehicles

Grant Recipient: Iowa State University

Award Amount: \$244,698

Project Description: The objective is to create a novel structure of all-solid state EV battery and apply 3D printing to manufacture it

Project Completion Date (projected): 09/25/2023

Description of Work Completed: The research work has mainly focused on the production and testing of LFP/LTO half cells. The purpose is to ensure the self-synthesized materials and self-made battery components have satisfactory electrochemical performance Firstly, LFP and LTO half cells were assembled with commercial liquid electrolytes to test the performance of solely the electrodes. The results showed that they have acceptable charge transfer resistance Then, LFP half cells were assembled with our self-synthesized solid electrolyte to test the interfacial contact between the electrodes and electrolyte The electrodes were first printed as a seamless thick layer, onto which the electrolyte was printed to form composite films The films were heated after printing to evaporate the solvent and cut into round chips for half-cell assembly. The cells with solid three electrolytes were found to have much larger charge transfer resistance than the ones with liquid electrolytes This was thought to be caused by the undesirable contact between the electrolyte and the Lithium chips (reference and counter electrode) in the cells, since the electrolyte had already become a dry film with a rough surface when it was put with the Li chips As a solution, in the next step, the team will directly print a full cell configuration of LFP|solid electrolyte|LTO and test it so that each layer is put together before drying.

Grant Name: Low-cost Biobased Composite Materials for Ultra-durable and Recyclable Wind Turbine Blades

Grant Recipient: Iowa State University

Award Amount: \$450,436

Project Description: The objective is to develop low-cost, biobased recyclable turbine blade material with high durability

Project Completion Date (projected): 09/25/2024

Description of Work Completed: The project team has performed differential scanning calorimetry (DSC) of polymer composite, Raman spectroscopy of the CNOs, synthesizing thermoplastic epoxy resin, and developing new mold for thermoset epoxy resin polymer They have also worked to create a composite, molds for the thermoset testing In the coming months, the project team will work with the mechanical testing of different composites to confirm their impact on mechanical properties They will also perform rheology and spectroscopy of the composite They will then fabricate the first batch of thermoset epoxy resin

Grant Name: Predicting Battery Lifetime with Early-Life Data for Grid Applications

Grant Recipient: Iowa State University

Award Amount: \$280,070

Project Description: The project will develop and teach a software tool for improving prediction of battery lifetime.

Project Completion Date (projected): 01/15/2024

Description of Work Completed: The University of Connecticut (UConn) and Iowa State University (ISU) teams continued to work on preparing a Python code for data preprocessing, feature extraction, and early prediction modeling During the past project month, the focus was to continue refining the code for data preprocessing and running the refined code on new aging data collected from lithium-ion polymer cells at ISU and Iowa Lakes Community College ("Iowa Lakes"). After being finalized, the code will be shared publicly with the battery aging dataset collected and used for this project. It will serve as the backbone of the prototype's software tool for early life prediction. 2. The UConn team has scheduled a tutorial talk on Python coding and battery data analysis, given to Engineering Technology students at Iowa Lakes as part of their ELT 493 - Industrial Networking and Data Acquisition class. This tutorial talk will be titled "Introduction to Battery Data Analysis in Python" and given by UConn Ph D student Tingkai Li who has been actively contributing to this project. Given the long-standing difficulties in obtaining field data, the UConn team continued to explore the possibility of testing lithium-ion battery cells in the lab under cycling conditions representative of two grid storage use cases. frequency regulation and peak shaving During the past project month, the team has designed two duty cycle profiles, one for frequency regulation and the other for peak shaving The next step will be to refine and finalize both duty cycle profiles

Grant Name: Rural Energy Planning

Grant Recipient: University of Northern Iowa

Award Amount: \$395,680

Project Description: The project will create workforce development for twenty employees in various energy career fields

Project Completion Date (projected): 11/30/2023

Description of Work Completed: The program identified eight communities for the final year of the project The program has conducted meetings with all sites to evaluate their plans and determine what actions need to be taken based on those plans for their final project year Project team worked with Waste Resource Center at UNI to gain referrals and have been focusing on auto-body shops and car dealerships as a result. The team has also handed out energy savers kits to community members, which has been a remarkably effective way to reach residents

Grant Name: Developing an Iowa Energy Curriculum for Secondary Classrooms

Grant Recipient: University of Northern Iowa

Award Amount: \$418,696

Project Description: Develop and disseminate an energy curriculum (with career connections) for Iowa secondary students.

Project Completion Date (projected): 08/25/2023

Description of Work Completed: Major efforts were undertaken to disseminate the curriculum units to Iowa teachers Requests for assistance with this effort, along with a publicity flier, were sent to the stakeholders and interested parties, including Project Partners as well as teachers who contributed to the development and field testing of the curriculum. Also included was Rick Olesen, a past member of the Iowa Energy Center's Board of Directors and a long-time advocate

for this project. Two additional career videos were recorded by the digital media student organization at the University of Northern Iowa. Interviewees were the Energy Services Manager and the Environmental Compliance Coordinator from Cedar Falls Utilities (a project partner). The student organization is in the process of editing the interviews for inclusion in the project's Supplemental Resources. Fine tuning of our project website (isec.uni.edu) continues based on feedback received from individuals solicited to review the site.

Grant Name: Developing a Pilot-Scale Business Model for Monetizing Carbon Capture on Solar Energy Farms

Grant Recipient: Impact 7G

Award Amount: \$297,000

Project Description: Create a business model for monetizing carbon capture on utility-scale solar energy farms on reclaimed land.

Project Completion Date (projected): 09/30/2024

Description of Work Completed: The city of Perry has delayed the construction of their solar farm, where the majority of the project tasks were set to take place. The project team has moved forward with testing of soil, planting, creating GIS models and data sets, and general research. The market demand assessment has also been completed and business model research continues. The delay in construction will likely lead to a no cost extension request for at least 12 months.

Grant Name: Driving Electric in Rural NE Iowa: An Analysis, Planning, Workforce and Major Employer Partnership

Grant Recipient: Winneshiek Energy District

Award Amount: \$171,235

Project Description: An EV prosperity collaborative for communities, employers, workers, and individuals in NE Iowa.

Project Completion Date (projected): 08/31/2023

Description of Work Completed: Initiated EV workplace and public/visitor planning in conjunction with MiEnergy, attended city council meetings where the council voted to move forward with public facing chargers for their downtown area. Assisted with outreach for Get Charged Up! Carried out a mail campaign to recruit hard to reach employers and conducted a planning meeting with UIU. Created fleet and public charging fact sheets for project partners, coordinated with local dealerships for the potential distribution of public EV chargers. Plan to assist in installing four fleet chargers by the start of 23-24 school year at Luther College.

Grant Name: Building Enclosure Council of Iowa Educational Programs

Grant Recipient: Building Enclosure Council

Award Amount: \$27,000

Project Description: Host 5 building science educational events and one large event per year.

Project Completion Date (projected): 10/07/2024

Description of Work Completed: The project team has hosted several smaller educational/training meetings, as well as two annual conferences. These conferences focus on building trends and building enclosure design. The team plans to host 4-5 more small meetings and one additional annual conference before the end of the grant period.

Grant Name: GIS tool to plan mitigation and recovery of gridlines under natural hazards to improve resiliency.

Grant Recipient: Iowa State University

Award Amount: \$235,551

Project Description: Develop a GIS tool for planning and mitigation and enhancing situational awareness of power utilities.

Project Completion Date (projected): 10/03/2023

Description of Work Completed: The PI has conducted a review of the available GIS tools operated by the municipalities, cooperative and investor-owned utilities. ITC, CIPCo and Spencer Utilities have agreed to share information on their GIS systems. This review highlighted the need for a tool for cooperatives and municipalities. Later in the project life, Muscatine Water and Power agreed to provide outage data to the project team. This data is being used in the statistical models to extract the statistical correlations with weather events. These models will then be correlated with the physical attributes of the components of the infrastructure.

Grant Name: Artificial Intelligence-Assisted Robotic Mapping of Underground Infrastructure

Grant Recipient: Iowa State University

Award Amount: \$300,000

Project Description: The team will develop an AI-robot platform to automate mapping of underground infrastructure

Project Completion Date (projected): 12/21/2024

Description of Work Completed: The project team started by ordering parts and building the platform. They then purchased a drone and obtained an FAA license to operate the drone. Following this, the team reviewed literature on AI and assembled information into their database, while also collecting data at the research park. This information was used to build fuzzy logic rules and a map. The map will then be assessed, and they will refine the document. The team then visited a construction site in Grimes to collect data on pipelines pre-burial.

Grant Name: 21-IEC-007

Grant Recipient: From the Landfill to the Grid: Repurposing Used Batteries for Resilient Grid Storage

Award Amount: \$294,859

Project Description: Refurbish spent Li-ion batteries for second-life applications on the electric power grid.

Project Completion Date (projected): 10/03/2023

Description of Work Completed: The project team's approach is to rejuvenate the Li in the battery cathode, without damaging or disrupting the battery materials and configuration. They are focusing on ideas that can leave the battery system fully in-tact, bypassing the need to fully deconstruct the battery during recycling. Early work has shown that refurbishing outcomes are strongly dependent on EV battery chemistry. LFP batteries are the best choice for rejuvenation. Prognostic modeling has started for end-of-life rejuvenated cells. The team has sixty-four cells cycling to parameterize the modeling. The team has written and submitted on paper and has begun work on proof of concept for new intellectual property around battery repurposing.

Grant Name: Control and Coordination of Solar + Storage for Enhanced Resiliency

Grant Recipient: Iowa State University

Award Amount: \$283,500

Project Description: The project proposes to enhance grid resiliency by control of solar plants/devices with storage

Project Completion Date (projected): 10/03/2024

Description of Work Completed: The project team has developed an optimization framework for leveraging the flexibility of the distribution grid for increasing the stability margin of the grid which indirectly increases the resiliency of the overall grid. The team then completed the preliminary implementation of generalized optimization framework using open-DSS and python. It was then tested using a simple distribution system with PV. The uncertainties that needed to be included in the optimal flow load were then identified. Finally, the team has developed an optimization framework for maintaining voltages. They then developed a framework and tested it. The results were validated by using simple distribution systems with PV. Future work includes improving the optimization framework to include other possible network connections, identify uncertainties to the optimal power flow formulation and test the developed framework with Alliant Energy.

Grant Name: Advanced 3D Optical Sensing and Peening Technologies for Crack Mitigation in Natural Gas Pipelines

Grant Recipient: Iowa State University

Award Amount: \$255,472

Project Description: The project is to develop a pre-service inspection and crack mitigation solution for gas pipelines

Project Completion Date (projected): 10/03/2023 (have requested a no cost extension)

Description of Work Completed: The hardware setup with an unpackaged software for a laboratory-scale prototype has been established to scan surface topographies with micrometer resolution. The research group has conducted a preliminary testing of the peening system on the weld toe area of sample surfaces. The team then developed automatic processes for repeated roughness, skewness and kurtoses measurements using 3D optical sensing. The team then started to work on the welding of pipeline steels and study the ultrasonic impact of peening on surface morphology. They then investigated approaches to characterize surface integrity and conducted ultrasonic peening experiments on additively manufactured metal samples. The PIs are currently studying the deformation depth of ultrasonic impact peening and plan to work on surface roughness analysis of curvilinear surface to transfer the research on planar samples not curved samples similar to a pipeline.

Grant Name: Electrical Energy from Ethanol

Grant Recipient: University of Iowa

Award Amount: \$417,137

Project Description: Electricity from Ethanol. low cost, scalable ethanol fuel cell (DECF) systems

Project Completion Date (projected): 10/07/2024

Description of Work Completed: The direct ethanol fuel cell (DEFC) requires optimization of electrocatalysts for two electrodes, the anode for ethanol oxidation and the cathode for oxygen reduction reaction, ORR. The lanthanide catalysts are deposited on the carbon electrodes and evaluated in either 95% ethanol + electrolyte for the anode or aqueous electrolyte for ORR at the cathode. Catalysts are effective in liquid and vapor environments. Anion separators were discussed and commercially available fumasep was ordered to try in fuel cells run under basic conditions. Attempts to cast a free-standing membrane continue for sulfonate PEEK (SPEEK) and a polythiophene. Perhaps the largest advance is consideration of an ethanol vapor fed anode rather than a liquid fed anode. This has several advantages in improved separator performance, decrease in electrolyte additives, introduction of increased oxygen from the atmosphere to the cathode, and perhaps handles hydration of the cell. The model takes advantage of the best parts of the gas fed H₂/O₂ fuel cells and overcomes several of the disadvantages such as humidification of the gases.

Grant Name: Modeling Solar Radiation Potential and Urban Heat Utilizing Mobile Sensors and Topographic Data

Grant Recipient: University of Northern Iowa

Award Amount: \$170,370

Project Description: Detailed solar radiation and urban temperature mapping across Iowa with web-based dissemination

Project Completion Date (projected): 08/31/2023

Description of Work Completed: The project team had a project kickoff meeting and discussed a variety of issues including the literature review, identifying some key research, equipment construction potential, field work planning, and potential sampling strategies. The team worked on a variety of tasks including testing of equipment, building out multiple instrument configurations, continued literature review and discussion, as well as field temperature data collection planning and actual collection. Dr. James Dietrich led the effort to finish assembling nine complete instrument configurations including the addition of light sensors in each unit. The project team worked on building ancillary datasets for urban heat analysis and modeling as well as continuing to work with statewide LiDAR data as well as completing basic statistical analysis of study sites from urban temperature collection in 2022. They continued work on developing workflows and computing algorithms for the solar radiation modeling based on LiDAR data. Lidar data for the whole state became available in November and the team built a complete index of the LiDAR tile structure and carried out more testing of automatic download/processing.

ATTACHMENT C

ACTION

REPORT
IOWA ENERGY CENTER BOARD
JUNE 2023

From: Iowa Energy Center

Subject: Second No Cost Extension for 20-IEC-009

Background: The Iowa Economic Development Authority received a request from Iowa State University to extend the agreement end date for project 20-IEC-009 to August 31, 2024.

The above referenced agreement was made to Iowa State University with an agreement end date of August 31, 2022. An initial no cost extension was requested by Iowa State University and approved by staff in August 2022. This extension was granted for one year, extending the agreement end date to August 31, 2023. The research team had some difficulty processing a subcontract that would allow them to monitor the installation four additional MicroPMUs in smart solar inverter settings. This subcontract was established in March 2023. General supply chain and shipping issues also caused the delay of the equipment. The project teams feels that in order to complete the project, they need additional time to analyze the data that they received from their project partner's system.

Recommendation: Staff recommends approving the second no cost extension, changing the agreement end date from August 31, 2023 to August 31, 2024.

Proposed Motion: Approve the Amendment to 20-IEC-009

Submitted By: Amber Buckingham, Program Manager

Attachments: 20-IEC-009 No Cost Extension Request

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Office of Sponsored
Programs Administration

1138 Pearson Hall
505 Morrill Road
Ames, Iowa 50011-2103
Phone: 515 294-5225
Fax: 515 294-8000

May 25, 2023

Amber Buckingham
Amber.Buckingham@IowaEDA.com

SUBJECT: **Award Number:** 20-IEC-009
 Request for a Second No-Cost Extension
 ISU Account: AWD-022417 **ISU ID:** 145710
 ISU PI: Zhaoyu Wang

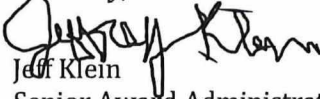
Dear Amber,

The above referenced award was made to Iowa State University and has a current end date of 8/31/2023. I am in receipt of a letter from the Principal Investigator, Zhaoyu Wang, requesting a 12 month second no-cost extension to complete the work being undertaken on this project.

Justification: Alliant has installed and commissioned 3 microPMUs in their Decorah substation. These devices are transmitting data to our cloud platform which both ISU and Alliant have access. Next step: Alliant plans to install 4 more microPMUs in a different feeder to study the smart solar inverter settings. This work involves a significant portion of field demo and big data analytics. There are three reasons that we need a one-year extension: 1. The subcontract to Alliant Energy has been delayed due to administration process. We just established the subcontract in March 2023. 2. We need time to place the order, receive the shipment, and install them in the field. The order and shipment may be delayed because of the supply chain issue and the complex coordination between POWERSIDE and Alliant. 3. The access to the data sharing and analysis platform has been delayed because of the platform provider's technical issue, although it has been solved now. We need more time to analyze the data.

Iowa State University has carefully reviewed the request and concurs therein. **We request the termination date be changed from 8/31/2023 to 8/31/2024.** All other terms and conditions remain unchanged. If I may provide you with additional information or be of further assistance, please do not hesitate to contact our office.

Sincerely,


Jeff Klein

May 25, 2023

Senior Award Administrator

cc: Zhaoyu Wang
 Samantha Dubert

ATTACHMENT D

ACTION

REPORT
IOWA ENERGY CENTER BOARD
JUNE 2023

From: Iowa Energy Center

Subject: Budget Modification for 20-IEC-016

Background: Iowa State University has requested a budget modification amendment for award 20-IEC-016 *Improve battery energy efficiency via structural design and 3D printing for electric vehicles.*

The PI has indicated the need to reallocate funds within the approved budget to support costs relevant to the proposed research activities, such as supplies and materials and supporting a post doc in lieu of a graduate student. The PI indicates that there was shortage of graduate students and the team had to hire a post-doc to complete the work. Additionally, supplies and material costs have increased substantially due to supply chain challenges. They have requested to move \$55,482 from Student Tuition and Domestic Travel to Salaries and Wages, Fringe Benefits and Supplies/Materials. These changes do not impact the overall grant award request, which remains unchanged.

Administrative Rule 261 *IAC 404.7(7)(a)* provides that any substantive change to a funded IEC project, including time extensions, budget revisions, and alterations to proposed activities, will be considered an agreement amendment. As this request is over \$10,000, Board approval is necessary.

Recommendation: Staff recommends approving the amendment to 20-IEC-016; moving the requested funds from Student Tuition and Domestic Travel to Salaries and Wages, Fringe Benefits and Supplies and Materials.

Proposed Motion: **Approve the Amendment to 20-IEC-016**

Submitted By: Amber Buckingham, Program Manager

Attachments: Rebudget Request from Iowa State University

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Office of Sponsored
Programs Administration
1138 Pearson Hall
505 Morrill Road
Ames, Iowa 50011-2103
Phone: 515 294-5225
Fax: 515 294-8000

May 18, 2023

Amber Buckingham
Amber.Buckingham@IowaEDA.com

SUBJECT:

Award Title: Improve battery energy efficiency via structural design and 3D printing for electric vehicles

Revised Budget Request

ISU Account: AWD-023370

ISU ID: GS 148594

ISU PI: Shan Hu

Dear Ms. Buckingham:

The above referenced grant was made to Iowa State University in the amount of \$244,698.00 under the direction of Dr. Shan Hu who has requested that budget categories be adjusted as prescribed below and per the justification.

Budget categories to be adjusted:

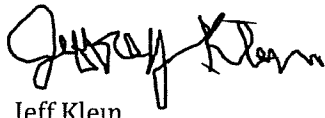
INCREASE		DECREASE	
Salary/Hourly (0108)	\$ 17,033	Salary/Hourly (0108)	\$
Payroll Benefits (0130)	\$ 16,942	Payroll Benefits (0130)	\$
Equipment (0710)	\$	Equipment (0710)	\$
Domestic Travel (0215)	\$	Domestic Travel (0215)	\$ 9,901
Foreign Travel (0216)	\$	Foreign Travel (0216)	\$
Student Tuition (0610)	\$	Student Tuition (0610)	\$ 34,485
Supply/Materials (0410)	\$ 10,410	Supply/Materials (0410)	\$
<i>Subcontracts</i>		<i>Subcontracts</i>	
Burdenable (0396)	\$	Burdenable (0396)	\$
Nonburdenable (0376)	\$	Nonburdenable (0376)	\$
<i>Other Direct Costs</i>		<i>Other Direct Costs</i>	
Telecommunications (0340)	\$	Telecommunications (0340)	\$
Computing (0353)	\$	Computing (0353)	\$
Printing/Copying (0373)	\$	Printing/Copying (0373)	\$
Honoraria/Services (0302)	\$	Honoraria/Services (0302)	\$
Postage (0379)	\$	Postage (0379)	\$
Other (0630)	\$	Other (0630)	\$
TOTAL DIRECT COSTS	\$ 44,386	TOTAL DIRECT COSTS	\$ 44,386
Indirect Costs (0642) Rate: 25%	\$ 11,096	Indirect Costs (0642) Rate: 25%	\$ 11,096
TOTAL ALL COSTS	\$ 55,482	TOTAL ALL COSTS	\$ 55,482

Justification: To hire of postdoc/research scientist which was not budgeted originally. The reason to hire a postdoc as opposed to hiring a graduate student was due to the difficulty to bring a graduate student on board when the project started. The project started in January 2021 and there was shortage of graduate students in both IMSE and ME due to COVID travel restrictions and closure of US consulates in several countries where international graduate students typically come from.

In addition, supplies and material prices increased substantially due to supply chain challenges which caused the supply budget line to be overspent.

We at Iowa State University have reviewed Dr. Hu's request and concur therein. Therefore, we request approval for the attached revised budget. If I can provide you with additional information or be of further assistance, please do not hesitate to contact me.

Sincerely,



May 18, 2023

Jeff Klein
Senior Award Administrator
Office of Sponsored Programs Administration

cc: Shan Hu

Applicant: Farmers Electric Cooperative
Loan Request: \$1,000,000
Recommendation: To be provided at Board Meeting
Board Decision: June 6, 2023

ATTACHMENT E

Summary

Farmers Electric Cooperative in Kalona, Iowa plans to complete and own a solar project to serve its members. The project will add 998 kW of solar on a 3.5-acre site. The total project cost is \$1,348,345 and the applicant is requesting a 10-year loan term.

Funding Sources

Other Financing

Source	Form	Amount
Reserve funds at FEC	Cash	\$400,000

*Amount subject to adjustment based on potential grant approval and reserves needed

Incentives

Name of Incentive	Source	Amount
Federal Investment Tax Credit (ITC)	Federal	\$360,000
USDA REAP grant (not secured)	Federal	\$250,000
Total		\$610,000

Documented commitments from sources of funding needed to complete the project will be required as a condition to disbursement of EIRLP funds.

Program Purpose and Eligibility

The Energy Infrastructure Revolving Loan Program (EIRLP) requires projects to fulfill at least one of the program purposes. This project would provide electricity generation consistent with the energy infrastructure definition. The program also requires projects to fulfill at least one of three evaluation criteria:

- Broad-reaching benefits to the state, local community and/or utility ratepayers.
- Creative or innovative approach to a need or problem.
- Assistance is necessary to reduce the project's risk.

Responses to the criteria were provided in their application and the program procedure requires the Loan Committee to evaluate applications using these three criteria. A summary of the evaluation will be provided to the IEC board with its recommendation at the June 6 meeting.

Collateral

The collateral pledged to secure the loan is an Irrevocable Letter of Credit from the applicant's lender.

IOWA ENERGY CENTER LOANS PROJECT REPORT



Applicant: Farmers Electric Cooperative
Loan Request: \$1,000,000
Recommendation: To be provided at Board Meeting
Board Decision: June 6, 2023

Project Timeline

Board Decision Date: June 6, 2023
Estimated Completion: November 2023

ATTACHMENT F

REPORT
IOWA ENERGY CENTER BOARD
June 2023

ACTION

From: IEDA Legal

Subject: Appointments to Committees and Election of Chair/Vice-Chair

1. Appointments to Grant Committee

261 *IAC* 403.3(6)(a)(1) provides that, each year, the Board determines the size of the Grant Committee and appoints members to the committee.

Proposed Motion:

Reappoint Jennifer Johnson, Dan Nickey and Matt Washburn to a three-person Grant Committee for a term from July 1, 2023 to April 30, 2024, subject to reappointment to the Board.

2. Appointments to Loan Committee

261 *IAC* 403.3(6)(b)(1) provides that, each year, the Board determines the size of the Loan Committee and appoints members to the committee.

Proposed Motion:

Reappoint Stuart Anderson, Kelcey Brown, Troy DeJoode, Craig Just, and Scott Stokes to a five-person Loan Committee for a term from July 1, 2023 to April 30, 2024, subject to reappointment to the Board.

3. Election of Chair and Vice Chair

Proposed Motion:

Elect Stuart Anderson to serve as Chair and Craig Just to serve as Vice Chair for a term from July 1, 2023 to April 30, 2024, subject to reappointment to the Board.

Submitted By: Lisa Connell, Legal Counsel

ATTACHMENT G



Alliant Energy Solar Farm at Iowa State University

June 2023



Project Team

- Nick Peterson, Alliant Energy
- Ray Klein, College of Agriculture, Iowa State University
- Dr. Ajay Nair, Department of Horticulture, Iowa State University
- Dr. Matt O'Neal, Department of Plant Pathology, Entomology and Microbiology, Iowa State University
- Dr. Anne Kimber, Electric Power Research Center, Iowa State University
- Dr. Hongli Feng, Center for Agriculture and Rural Development, Iowa State University

Pragmatism to Cross Functional Collaboration

- ISU Research Farms interested in renewables and lowering costs
- President Wintersteen's ESG goals
- Electric Power Research Center long standing partnership with Alliant Energy
- Alliant Energy's goals of serving customers including the agriculture community
- World class researchers in horticulture and entomology right in our backyard.

Alliant Energy Solar Farm at Iowa State University

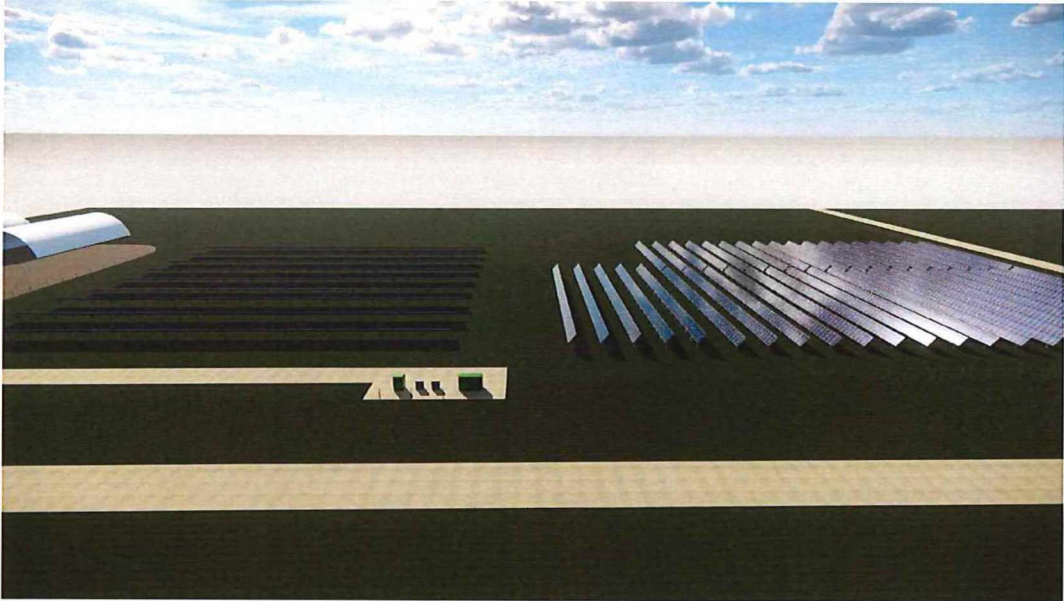
- 1.35 MW customer hosted solar project
- Fixed & single axis tracker setup
- Demonstrate agrivoltaics at utility scale
- Create research opportunities to maximize understanding of microclimates.



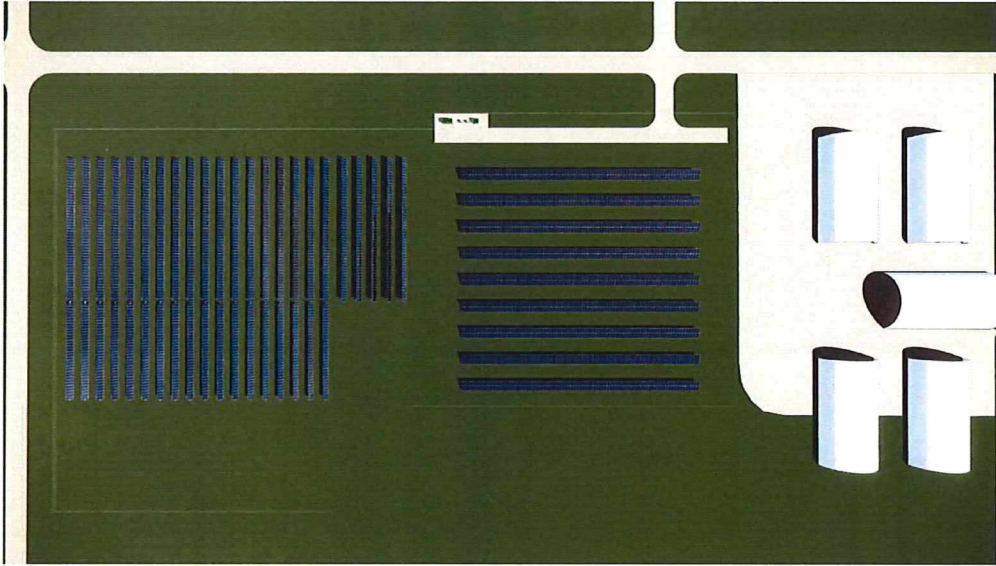
What the DOE Grant will support

- Research on five main crops that will be grown under and around panels.
- 2 Fruits (strawberries & raspberries)
- 3 Vegetables (peppers, summer squash, broccoli)
- Pollinator habitat and apiary for beekeeping
- String inverters to examine electricity production a granular level
- Real time data dashboard to monitor energy production
- Community and Educational demonstrations

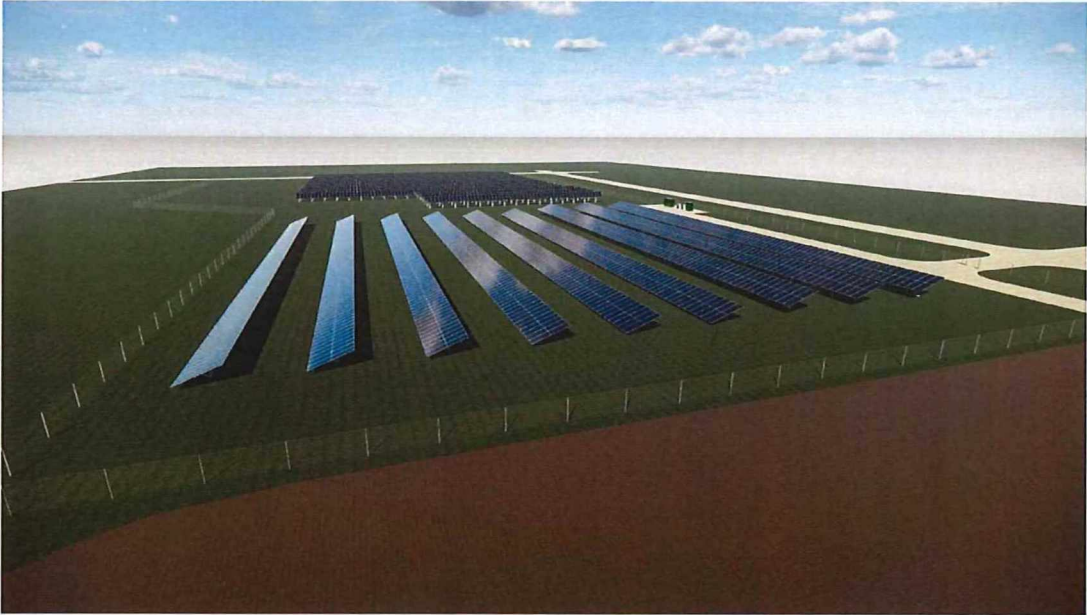
Farm Design



Farm Design cont.



Research and Design Features



Questions?

Thank You



ATTACHMENT H



Iowa Energy Center Board Meeting

IEDA Energy Office Updates | June 6, 2023

Stephanie Weisenbach | Jeff Geerts
Iowa Economic Development Authority | Iowa Energy Office



Iowa Grid Resilience Fund

- **Objective:** Improve the resilience of the electric grid against disruptive events
- **Formula allocation from US DOE to Iowa through Bipartisan Infrastructure Law (BIL):** Approx \$5.9M per year for five years, a portion set aside for small utilities. IEDA to set up **Iowa Grid Resilience Fund**.
- **Use of funds may include:**
 - Utility pole management
 - Hardening of power lines, facilities, substations
 - Undergrounding of electrical equipment
 - Replacement of old overhead conductors and underground cables
 - Relocation of power lines or reconductoring of power lines with low-sag, advanced conductors
 - Vegetation and fuel-load management
 - Weatherization technologies and equipment
 - Monitoring and control technologies
 - Enhancing system adaptive capacity (microgrids, battery storage)
 - Advanced modeling technologies
 - Workforce training

CANNOT be used for new electric generating facilities or cybersecurity

Iowa Grid Resilience Fund

- **Eligible entities for subawards:** electric grid operators, electricity generators, transmission owners or operators, distribution providers
- **Awardee match requirement:** 15% of allocation
- **Sub awardee match requirement:** 100% of subaward or if entity sells less than 4M MWh annually, match will be 1/3 of subaward
- Iowa's application due to DOE has been submitted and approved, award process underway
- Program marketing, education and technical assistance
 - Potential to increase muni/REC applicants to Iowa Energy Center loan program for sub awardee match
- Application cycle estimated fall 2023
- IEDA to review applications using criteria
 - Includes/not limited to benefitting underserved populations, workforce development, community benefits, distribution of funds, grid improvement impact, innovation
- Award funds, implement reporting and compliance requirements
- **More information/updates at <https://www.iowaeda.com/iowa-grid-resilience-fund>**

Energy Efficiency and Conservation Block Grant Program

Iowa Energy Office to receive \$2,004,050

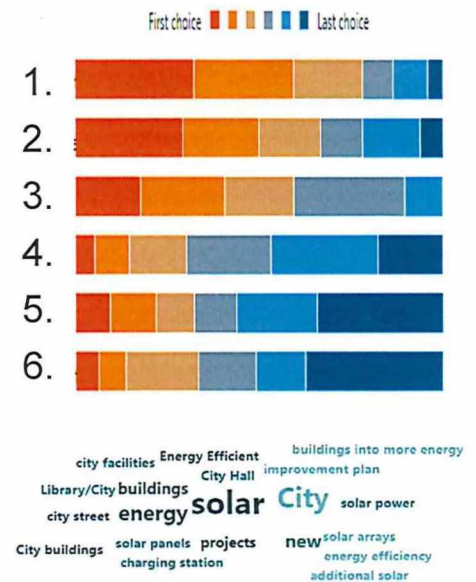
Receiving direct federal allocations:

• Ames	-	\$128,040
• Ankeny	-	\$124,300
• Bettendorf	-	\$76,290
• Cedar Falls	-	\$76,450
• Cedar Rapids	-	\$185,610
• Cerro Gordo County	-	\$76,530
• Council Bluffs	-	\$122,870
• Clinton County	-	\$76,610
• Dallas County	-	\$77,020
• Davenport	-	\$155,580
• Des Moines	-	\$245,640
• Dubuque	-	\$123,070
• Dubuque County	-	\$76,330
• Iowa City	-	\$136,380
• Johnson County	-	\$77,580
• Linn County	-	\$76,710
• Marion	-	\$76,340
• Marshall County	-	\$76,390
• Muscatine County	-	\$76,520
• Polk County	-	\$79,550
• Sioux City	-	\$140,390
• Urbandale	-	\$76,590
• Waterloo	-	\$129,180
• Warren County	-	\$76,660
• West Des Moines	-	\$131,740

Blueprint Topic Areas

1. Energy efficiency (e.g., building audits and retrofits, building electrification campaigns, building performance standards)
2. Renewables (e.g., solar and battery storage power purchasing agreements, solarize campaigns, renewable resource planning for communities)
3. Energy planning
4. Sustainable financing solutions for energy projects and programs
5. Workforce development
6. Transportation (e.g., electric vehicles for fleets, EV charging infrastructure for the community)

Preliminary survey results: 96 responses



Pre-award information sheet submitted & approved.

Questions?

Thank you for your time. Please do not hesitate to reach out.

