Instructions and Summary

Award Number: M9MMKLB6PDJ3
Award Recipient: Kaukauna Utilities

Date of Submission: 5/19/2023
Form submitted by: Kaukauna Utilities Clara Pickett AOR
(May be award recipient or sub-recipient)

Please read the instructions on each worksheet tab before starting. If you have any questions, please ask your DOE contact!
Do not modify this template or any cells for formulas!

1. If using this form for award application, negotiation, or budget revision, fill out the blank white cells in workbook tabs a. through j. with total project costs.
2. Blue colored cells contain instructions, headers, or summary calculations and should not be modified. Only blank white cells should be populated.
3. Enter detailed support for the project costs identified for each Category line item within each worksheet tab to autopopulate the summary tab.
4. The total budget presented on tabs a. through i. must include both Federal (DOE) and Non-Federal (cost share) portions.
5. All costs incurred by the preparer's sub-recipients, contractors, and Federal Research and Development Centers (FFRDCs), should be entered only in section f. Contractual. All other sections are for the costs of the preparer only.
6. Ensure all entered costs are allowable, allocable, and reasonable in accordance with the administrative requirements prescribed in 2 CFR 200, and the applicable cost principles for each entity type: FAR Part 31 for For-Profit entities; and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.
7. Add rows as needed throughout tabs a. through j. If rows are added, formulas/calculations may need to be adjusted by the preparer. Do not add rows to the Instructions and Summary tab. If your project contains more than five budget periods, consult your DOE contact before adding additional budget period rows and columns.
8. ALL budget period cost categories are rounded to the nearest dollar.

BURDEN DISCLOSURE STATEMENT

Public reporting burden for this collection of information is estimated to average 24 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Office of Information Resources Management Policy, Plans, and Oversight, AD-241-2 - GTN, Paperwork Reduction Project (1910-5162), U.S. Department of Energy 1000 Independence Avenue, S.W., Washington, DC 20585; and to the Office of Management and Budget, Paperwork Reduction Project (1910-5162), Washington, DC 20503.

SUMMARY OF BUDGET CATEGORY COSTS PROPOSED

The values in this summary table are from entries made in subsequent tabs, only blank white cells require data entry

Section A - Budget Summary

	Federal	Cost Share			Total Costs	Cost Share %	Proposed Budget Period Dates
Budget Period 1	$159,526	$866,877			$1,026,403	84.46%	01/01/2024 - 12/31/2024
Budget Period 2	$1,965,017	$115,032			$2,080,049	5.53%	01/01/2025 - 12/31/2025
Budget Period 3	$130,458	$360,832			$491,290	73.45%	01/01/2026 - 12/31/2026
Budget Period 4	$440,722	$133,728			$574,450	23.28%	01/01/2027 - 12/31/2027
Budget Period 5	$316,740	$250,548			$567,288	44.17%	01/01/2028 - 12/31/2028
Total	$3,012,462	$1,727,019			$4,739,481	36.44%	

Section B - Budget Categories

CATEGORY	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Costs	% of Project	Comments (as needed)
a. Personnel	(b) (4)							
b. Fringe Benefits								
c. Travel	$3,630	$6,090	$6,090	$9,330	$3,630	$28,770	0.61%	
d. Equipment	$737,433	$1,854,579	$40,000	$300,000	$171,814	$3,103,827	65.49%	
e. Supplies	$4,500	$0	$0	$0	$0	$4,500	0.09%	
f. Contractual								
Sub-recipient	$0	$0	$0	$0	$0	$0	0.00%	
Contractor	$220,340	$219,380	$335,200	$265,120	$391,844	$1,431,884	30.21%	
FFRDC	$0	$0	$0	$0	$0	$0	0.00%	
Total Contractual	$220,340	$219,380	$335,200	$265,120	$391,844	$1,431,884	30.21%	
g. Construction	$60,500	$0	$110,000	$0	$0	$170,500	3.60%	
h. Other Direct Costs	$0	$0	$0	$0	$0	$0	0.00%	
Total Direct Costs	$1,026,403	$2,080,049	$491,290	$574,450	$567,288	$4,739,481	100.00%	
i. Indirect Charges	$0	$0	$0	$0	$0	$0	0.00%	
Total Costs	$1,026,403	$2,080,049	$491,290	$574,450	$567,288	$4,739,481	100.00%	

Additional Explanation (as needed):

a. Personnel

INSTRUCTIONS - PLEASE READ!!!

1. List project costs solely for employees of the entity completing this form. All personnel costs for subrecipients and contractors must be included under f. Contractual.
2. All personnel should be identified by position title and not employee name. Enter the amount of time (e.g., hours or % of time) and the base hourly rate and the total direct personnel compensation will automatically calculate. Rate basis (e.g., rate negotiated for each hour worked on the project, labor distribution report, state civil service rates, etc.) must also be identified.
3. If loaded labor rates are utilized, a description of the costs the loaded rate is comprised of must be included in the Additional Explanation section below. DOE must review all components of the loaded labor rate for reasonableness and unallowable costs (e.g. fee or profit).
4. If a position and hours are attributed to multiple employees (e.g. Technician working 4000 hours) the number of employees for that position title must be identified.
5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Position Title	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Project Total Hours	Project Total Dollars	Rate Basis
		Time (Hrs)	Hourly Rate ($/Hr)	Total Budget Period 1	Time (Hrs)	Hourly Rate ($/Hr)	Total Budget Period 2	Time (Hrs)	Hourly Rate ($/Hr)	Total Budget Period 3	Time (Hrs)	Hourly Rate ($/Hr)	Total Budget Period 4	Time (Hrs)	Hourly Rate ($/Hr)	Total Budget Period 5			
1	Sr. Engineer **(EXAMPLE!!!)**	2000	$85.00	$170,000	200	$50.00	$10,000	200	$50.00	$10,000	200	$50.00	$10,000	200	$50.00	$10,000	2400	$190,000	
2	Technicians (2)	4000	$20.00	$80,000	0	$0.00	$0	0	$0.00	$0	0	$0.00	$0	0	$0.00	$0	4000	$80,000	
1,2,6,7	System Operations Leads	2508																	KU Utilities In House Rate
1,2,3,4,5,6,7	Engineer	1024	(b) (4)																KU Utilities In House Rate
1,2,3,4,5,6,7	Project Manager	1921																	KU Utilities In House Rate
1,2,3,4,5,6,7	Senior Engineer	1921																	KU Utilities In House Rate
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
				$0			$0			$0			$0			$0	0	$0	
	Total Personnel Costs	7374		$0	0		$0	0		$0	0		$0	0		$0	7374	$0	

Additional Explanation (as needed):

Amme Storma:
70% benefits added
Fully Loaded, taxes and all other benefits

Hrly Rate	Fully Load Rate	
38.50	65.45	GIS Specialist
41.76	70.99	Purchasing supervisor
53.55	91.04	Distribution Superintendent
48.23	81.99	System Operations Lead
67.89	115.41	Project Manager/Engineering
55.55	94.44	Maintenance Sup
72.97	124.05	Engineering Operations Director
40.07	68.12	Environmental Compliance Mgr

b. Fringe Benefits

INSTRUCTIONS - PLEASE READ!!!
1. Fill out the table below by position title. If all employees receive the same fringe benefits, you can show "Total Personnel" in the Labor Type column instead of listing out all position titles.
2. The rates and how they are applied should not be averaged to get one fringe cost percentage. Complex calculations should be described/provided in the Additional Explanation section below.
3. The fringe benefit rates should be applied to all positions, regardless of whether those funds will be supported by Federal Share or Recipient Cost Share.
4. Each budget period is rounded to the nearest dollar.

Labor Type	Budget Period 1			Budget Period 2			Budget Period 3			Budget Period 4			Budget Period 5			Total Project
	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	Personnel Costs	Rate	Total	
EXAMPLE!!! Sr. Engineer	$170,000	20%	$34,000	$10,000	20%	$2,000	$10,000	20%	$2,000	$10,000	20%	$2,000	$10,000	20%	$2,000	$38,000
System Operations Leads	(b) (4)															
Engineer																
Project Manager																
Senior Engineer																
			$0			$0			$0			$0			$0	$0
Total:	**$0**		**$0**	**$0**		**$0**	**$0**		**$0**	**$0**		**$0**	**$0**		**$0**	**$0**

A federally approved fringe benefit rate agreement, or a proposed rate supported and agreed upon by DOE for estimating purposes is required at the time of award negotiation if reimbursement for fringe benefits is requested. Please check (X) one of the options below and provide the requested information if not previously submitted.

_____ A fringe benefit rate has been negotiated with, or approved by, a federal government agency. A copy of the latest rate agreement is/was included with the project application.*

____X__ There is not a current federally approved rate agreement negotiated and available.**

*Unless the organization has submitted an indirect rate proposal which encompasses the fringe pool of costs, please provide the organization's benefit package and/or a list of the components/elements that comprise the fringe pool and the cost or percentage of each component/element allocated to the labor costs identified in the Budget Justification (Form EERE 335.1).

**When this option is checked, the entity preparing this form shall submit an indirect rate proposal in the format provided in the Sample Rate Proposal at https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit, or a format that provides the same level of information and which will support the rates being proposed for use in the performance of the proposed project.

Additional Explanation (as necessary): Please use this box (or an attachment) to list the elements that comprise your fringe benefits and how they are applied to your base (e.g. Personnel) to arrive at your fringe benefit rate.

c. Travel

INSTRUCTIONS - PLEASE READ!!!

1. Identify Foreign and Domestic Travel as separate items. Examples of Purpose of Travel are subrecipient site visits, DOE meetings, project mgmt. meetings, etc. Examples of Basis for Estimating Costs are past trips, travel quotes, GSA rates, etc.
2. All listed travel must be necessary for performance of the Statement of Project Objectives.
3. Only travel that is directly associated with this award should be included as a direct travel cost to the award.
4. Federal travel regulations are contained within the applicable cost principles for all entity types.
5. Travel costs should remain consistent with travel costs incurred by an organization during normal business operations as a result of the organizations written travel policy. In absence of a written travel policy, organizations must follow the regulations prescribed by the General Services Administration.
6. Columns E, F, G, H, I, J, and K are per trip.
7. The number of days is inclusive of the day of departure and the day of return.
8. Recipients should enter City and State (or City and Country for International travel) in the Depart from and Destination fields.
9. Each budget period is rounded to the nearest dollar.

SOPO Task #	Purpose of Travel	Depart From	Destination	No. of Days	No. of Travelers	Lodging per Traveler	Flight per Traveler	Vehicle per Traveler	Per Diem Per Traveler	Cost per Trip	Basis for Estimating Costs
	Domestic Travel			**Budget Period 1**							
1	**EXAMPLE!!!** Visit to PV manufacturer			2	2	$250	$500	$100	$160	$2,020	Current GSA rates
1	Project Meeting 1 (Kickoff)	Kaukauna, Wisconsin	Washington, DC	1	3	$250	$800	$80	$80	$3,630	Based on estimate distance on per mile basis from Kaukauna, Wisconsin to Washington, DC (Assumed)
										$0	
										$0	
										$0	
	International Travel										
										$0	
	Budget Period 1 Total									**$3,630**	
	Domestic Travel			**Budget Period 2**							
3	FLISR Commissioning & Testing	Kaukauna, Wisconsin	California	3	3	$750	$800	$240	$240	$6,090	Based on estimate distance on per mile basis from Kaukauna, Wisconsin to California (Assumed)
										$0	
										$0	
										$0	
	International Travel										
										$0	
	Budget Period 2 Total									**$6,090**	
	Domestic Travel			**Budget Period 3**							
4	BESS Commissioning & Testing	Kaukauna, Wisconsin	Boston, MA	3	3	$750	$800	$240	$240	$6,090	Based on estimate distance on per mile basis from Kaukauna, Wisconsin to Boston, MA (Assumed)
										$0	
										$0	
										$0	
	International Travel										
										$0	
	Budget Period 3 Total									**$6,090**	
	Domestic Travel			**Budget Period 4**							
5	Microgrid Commissioning & Testing	Kaukauna, Wisconsin	Denver, CO	3	3	$750	$800	$240	$240	$6,090	Based on estimate distance on per mile basis from Kaukauna, Wisconsin to Denver, CO (Assumed)
5	Training	Kaukauna, Wisconsin	Denver, CO	2	2	$500	$800	$160	$160	$3,240	Based on estimate distance on per mile basis from Kaukauna, Wisconsin to Denver, CO (Assumed)
										$0	
										$0	
	International Travel										
										$0	
	Budget Period 4 Total									**$9,330**	
	Domestic Travel			**Budget Period 5**							
1	Project Meeting 2 (Project End)	Kaukauna, Wisconsin	Washington, DC	1	3	$250	$800	$80	$80	$3,630	Based on estimate distance on per mile basis from Kaukauna, Wisconsin to Washington, DC
										$0	
										$0	
										$0	
	International Travel										
										$0	
	Budget Period 5 Total									**$3,630**	
	PROJECT TOTAL									**$28,770**	

Additional Explanation (as needed):

d. Equipment

INSTRUCTIONS - PLEASE READ!!!

1. Equipment is generally defined as an item with an acquisition cost greater than $5,000 and a useful life expectancy of more than one year. Please refer to the applicable Federal regulations in 2 CFR 200 for specific equipment definitions and treatment.

2. List all equipment below, providing a basis of cost (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify items as they apply to the Statement of Project Objectives. If it is existing equipment, provide logical support for the estimated value shown.

3. During award negotiations, provide a contractor quote for all equipment items over $50,000 in price. If the contractor quote is not an exact price match, provide an explanation in the additional explanation section below. If a contractor quote is not practical, such as for a piece of equipment that is purpose-built, first of its kind, or otherwise not available off the shelf, provide a detailed engineering estimate for how the cost estimate was derived.

4. Each budget period is rounded to the nearest dollar.

SOPO Task #	Equipment Item	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
				Budget Period 1		
3,4,5	**EXAMPLE!!!** Thermal shock chamber	2	$70,000	$140,000	Vendor Quote - Attached	Reliability testing of PV modules- Task 4.3
2.2	Smart Reclosers	7	$49,044	$343,308	KU Total Install Cost Quote - Attached (Smart Recloser Quote)	Deployment of distribution automation and accommodating Microgrid operation.
2.2	Padmount Recloser	1	$114,125	$114,125	KU Total Install Cost Quote - Attached (Padmount Recloser Quote)	Deployment of distribution automation and accommodating Microgrid operation.
2.5	Transformers	2	$140,000	$280,000	Utility estimated based on previous purchases	The interconnection transformer for connecting BESS to the distribution system (utility grid).
	Budget Period 1 Total			$737,433		
				Budget Period 2		
4.2	BESS Procurement	1	$1,854,579	$1,854,579	Based on budgetary estimate from RFI	BESS will be the grid forming source for forming an island within the Microgrid boundaries and serving the load during outages and providing black-start capability.
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 2 Total			$1,854,579		
				Budget Period 3		
4.3	BESS Land Procurement	1	$40,000	$40,000	Utility estimate local land price	The land required for accommodating all BESS components and BESS installation
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 3 Total			$40,000		
				Budget Period 4		
5.3	Microgrid Control System (MGCS) Procurement and Installation	1	$300,000	$300,000	Based on budgetary estimate from RFI	The central controller which will be in charge of performing all sequence of operation for Microgrid and coordinating all resources for different applications.
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 4 Total			$300,000		
				Budget Period 5		
4.2	BESS O&M	1	$171,814	$171,814	From RFI	Cost of operating and maintaining system for availability and operation after installation and commissioning of system is completed.
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 5 Total			$171,814		
	TOTAL EQUIPMENT			**$3,103,827**		

Additional Explanation (as needed):

e. Supplies

INSTRUCTIONS - PLEASE READ!!!

1. Supplies are generally defined as an item with an acquisition cost of $5,000 or less and a useful life expectancy of less than one year. Supplies are generally consumed during the project performance. Please refer to the applicable Federal regulations in 2 CFR 200 for specific supplies definitions and treatment.

2. List all proposed supplies below, providing a basis of costs (e.g. contractor quotes, catalog prices, prior invoices, etc.). Briefly justify the need for the Supplies as they apply to the Statement of Project Objectives. Note that Supply items must be direct costs to the project at this budget category, and not duplicative of supply costs included in the indirect pool that is the basis of the indirect rate applied for this project.

3. Multiple supply items valued at $5,000 or less used to assemble an equipment item with a value greater than $5,000 with a useful life of more than one year should be included on the equipment tab. If supply items and costs are ambiguous in nature, contact your DOE representative for proper categorization.

4. Add rows as needed. If rows are added, formulas/calculations may need to be adjusted by the preparer.

5. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Category of Supplies	Qty	Unit Cost	Total Cost	Basis of Cost	Justification of need
				Budget Period 1		
4,6	**EXAMPLE!!!** Wireless DAS components	10	$360.00	$3,600	Catalog price	For Alpha prototype - Task 2.4
2.4	Fiber Optics Splice	9	$500.00	$4,500	Utility estimated based on previous purchases	Deployment of distribution automation
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 1 Total			**$4,500**		
				Budget Period 2		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 2 Total			$0		
				Budget Period 3		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 3 Total			$0		
				Budget Period 4		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 4 Total			$0		
				Budget Period 5		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
				$0		
	Budget Period 5 Total			$0		
	TOTAL SUPPLIES			**$4,500**		

Additional Explanation (as needed):

f. Contractual

INSTRUCTIONS - PLEASE READ!!!

1. The entity completing this form must provide all costs related to sub-recipients, contractors, and FFRDC partners in the applicable boxes below.

2. Sub-recipients (partners, sub-awardees): Subrecipients shall submit a Budget Justification describing all project costs and calculations when their total proposed budget exceeds either (1) $100,000 or (2) 25% of total award costs. These sub-recipient forms may be completed by either the sub-recipients themselves or by the preparer of this form. The budget totals on the sub-recipient's forms must match the sub-recipient entries below. A subrecipient is a legal entity to which a subaward is made, who has performance measured against whether the objectives of the Federal program are met, is responsible for programmatic decision making, must adhere to applicable Federal program compliance requirements, and uses the Federal funds to carry out a program of the organization. All characteristics may not be present and judgment must be used to determine subrecipient vs. contractor status.

3. Contractors: List all contractors supplying commercial supplies or services used to support the project. For each Contractor cost with total project costs of $100,000 or more, a Contractor quote must be provided. A contractor is a legal entity contracted to provide goods and services within normal business operations, provides similar goods or services to many different purchasers, operates in a competitive environment, provides goods or services that are ancillary to the operation of the Federal program, and is not subject to compliance requirements of the Federal program. All characteristics may not be present and judgment must be used to determine subrecipient vs.contractor status.

4. Federal Funded Research and Development Centers (FFRDCs): FFRDCs must submit a signed Field Work Proposal during award application. The award recipient may allow the FFRDC to provide this information directly to DOE, however project costs must also be provided below.

5. Each budget period is rounded to the nearest dollar.

SOPO Task #	Sub-Recipient Name/Organization	Sub-Recipient Unique Entity Identifier (UEI)	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
2,4	**EXAMPLE!!!** XYZ Corp.		Partner to develop optimal lens for Gen 2 product. Cost estimate based on personnel hours.	$48,000	$32,000	$16,000			**$96,000**
									$0
									$0
									$0
									$0
									$0
									$0
			Sub-total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

SOPO Task #	Contractor Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
6	**EXAMPLE!!!** ABC Corp.	Contractor for developing robotics to perform lens inspection. Estimate provided by contractor.	$32,900	$86,500				**$119,400**
1	Program management contractor (650 Hrs)	Support for services outside the utility staff expertise such as component integration and testing, special studies, consulting, etc. - the basis for cost is industry standard rates for similar companies	$19,180	$18,200	$18,200	$18,200	$18,200	**$91,980**
2	Service contractor for the medium volatge equipment installation (290 Hrs)	Support for services outside the utility staff expertise such as component integration and testing, special studies, consulting, etc. - the basis for cost is industry standard rates for similar companies	$30,000				$10,404	**$40,404**
3	Service contractor for integration of the distribution automation scheme(1860 Hrs)	Support for services outside the utility staff expertise such as component integration and testing, special studies, consulting, etc. - the basis for cost is industry standard rates for similar companies		$120,000		$100,000	$40,400	**$260,400**
4	EPC contractor for deployment and commissioning of the BESS (3900 Hrs)	Support for services outside the utility staff expertise such as component integration and testing, special studies, consulting, etc. - the basis for cost is industry standard rates for similar companies	$150,000	$35,000	$275,000		$49,880	**$509,880**
5	Service contractor for Microgrid controller testing and commissioning (3600 hrs.)	Support for services outside the utility staff expertise such as component integration and testing, special studies, consulting, etc. - the basis for cost is industry standard rates for similar companies	$20,160	$45,180	$41,000	$145,920	$261,280	**$513,540**
6	Consultant for review and close	Support for services outside the utility staff expertise such as component integration and testing, special studies, consulting, etc. - the basis for cost is industry standard rates for similar companies					$11,200	**$11,200**
7	Consultant for community benefit plan support	Support for services outside the utility staff expertise such as component integration and testing, special studies, consulting, etc. - the basis for cost is industry standard rates for similar companies	$1,000	$1,000	$1,000	$1,000	$480	**$4,480**
		Sub-total	**$220,340**	**$219,380**	**$335,200**	**$265,120**	**$391,844**	**$1,431,884**

SOPO Task #	FFRDC Name/Organization	Purpose and Basis of Cost	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Project Total
								$0
								$0
		Sub-total	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**

Total Contractual	**$220,340**	**$219,380**	**$335,200**	**$265,120**	**$391,844**	**$1,431,884**

Additional Explanation (as needed):

g. Construction

PLEASE READ!!!

1. Construction, for the purpose of budgeting, is defined as all types of work done on a particular building, including erecting, altering, or remodeling. Construction conducted by the award recipient is entered on this page. Any construction work that is performed by a contractor or subrecipient should be entered under f. Contractual.

2. List all proposed construction below, providing a basis of cost such as engineering estimates, prior construction, etc., and briefly justify its need as it applies to the Statement of Project Objectives.

3. Each budget period is rounded to the nearest dollar.

Overall description of construction activities: Example Only!!! - Build wind turbine platform

SOPO Task #	General Description	Cost	Basis of Cost	Justification of need
			Budget Period 1	
3	EXAMPLE ONLY!!! Three days of excavation for platform site	$28,000	Engineering estimate	Site must be prepared for construction of platform.
2.5	12 kV interconnection feeder construction	$45,000	Vendor Quote - Attached (12 kV Upgrade Quote)	For BESS interconnection to the grid
2.4	Fiber Communication construction	$15,500	Utility estimated based on previous purchases	Deployment of distribution automation
	Budget Period 1 Total	$60,500		
			Budget Period 2	
	Budget Period 2 Total	$0		
			Budget Period 3	
4.4	BESS Land Preparation & foundations	$110,000	Utility estimation local price	Land preparation for BESS installation
	Budget Period 3 Total	$110,000		
			Budget Period 4	
	Budget Period 4 Total	$0		
			Budget Period 5	
	Budget Period 5 Total	$0		
	TOTAL CONSTRUCTION	**$170,500**		

Additional Explanation (as needed):

h. Other Direct Costs

INSTRUCTIONS - PLEASE READ!!!

1. Other direct costs are direct cost items required for the project which do not fit clearly into other categories. These direct costs must not be included in the indirect costs (for which the indirect rate is being applied for this project). Examples are: tuition, printing costs, etc. which can be directly charged to the project and are not duplicated in indirect costs (overhead costs).

2. Basis of cost are items such as vendor quotes, prior purchases of similar or like items, published price list, etc.

3. Each budget period is rounded to the nearest dollar.

SOPO Task #	General Description and SOPO Task #	Cost	Basis of Cost	Justification of need
			Budget Period 1	
5	**EXAMPLE!!!** Grad student tuition - tasks 1-3	$16,000	Established UCD costs	Support of graduate students working on project
	Budget Period 1 Total	$0		
			Budget Period 2	
	Budget Period 2 Total	$0		
			Budget Period 3	
	Budget Period 3 Total	$0		
			Budget Period 4	
	Budget Period 4 Total	$0		
			Budget Period 5	
	Budget Period 5 Total	$0		
	TOTAL OTHER DIRECT COSTS	**$0**		

Additional Explanation (as needed):

i. Indirect Costs

INSTRUCTIONS - PLEASE READ!!!
1. Fill out the table below to indicate how your indirect costs are calculated. Use the box below to provide additional explanation regarding your indirect rate calculation.
2. The rates and how they are applied should not be averaged to get one indirect cost percentage. Complex calculations or rates that do not do not correspond to the below categories should be described/provided in the Additional Explanation section below. If questions exist, consult with your DOE contact before filling out this section.
3. The indirect rate should be applied to both the Federal Share and Recipient Cost Share.
4. NOTE: A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim resulting cost as a Cost Share contribution, nor can the Recipient claim "unrecovered indirect costs" as a Cost Share contribution**. Neither of these costs can be reflected as actual indirect cost rates realized by the orgnaization, and therefore are not verifiable in the Recipient records as required by Federal Regulation (200.306(b)(1))
5.. Each budget period is rounded to the nearest dollar.

	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total	Explanation of BASE
Provide ONLY Applicable Rates:							
Overhead Rate	0.00%	0.00%	0.00%	0.00%	0.00%		*Example: Labor + Fringe*
General & Administrative (G&A)	0.00%	0.00%	0.00%	0.00%	0.00%		
FCCM Rate, if applicable	0.00%	0.00%	0.00%	0.00%	0.00%		
OTHER Indirect Rate	0.00%	0.00%	0.00%	0.00%	0.00%		
Indirect Costs (As Applicable):							
Overhead Costs						$0	
G&A Costs						$0	
FCCM Costs, if applicable						$0	
OTHER Indirect Costs						$0	
Total indirect costs requested:	$0	$0	$0	$0	$0	$0	

A federally approved indirect rate agreement, or rate proposed (supported and agreed upon by DOE for estimating purposes) is required if reimbursement of indirect costs is requested. Please check (X) one of the options below and provide the requested information if it has not already been provided as requested, or has changed.

_____ An indirect rate has been approved or negotiated with a federal government agency. A copy of the latest rate agreement is included with this application and will be provided electronically to the Contracting Officer for this project.
___X___ The organization does not have a current, federally approved indirect cost rate agreement and has provided an indirect rate proposal in support of the proposed costs.
_____ This organization has elected to apply a 10% de minimis rate in accordance with 2 CFR 200.414(f).

You must provide an explanation (below or in a separate attachment) and show how your indirect cost rate was applied to this budget in order to come up with the indirect costs shown.

Additional Explanation (as needed): *IMPORTANT: Please use this box (or an attachment) to further explain how your total indirect costs were calculated. If the total indirect costs are a cumulative amount of more than one calculation or rate application, the explanation and calculations should identify all rates used, along with the base they were applied to (and how the base was derived), and a total for each (along with grand total).

Cost Share

PLEASE READ!!!

1. A detailed presentation of the cash or cash value of all cost share proposed must be provided in the table below. All items in the chart below must be identified within the applicable cost category tabs a. through i. in addition to the detailed presentation of the cash or cash value of all cost share proposed provided in the table below. Identify the source organization & amount of each cost share item proposed in the award.

2. Cash Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) for costs incurred and paid for during the project. This includes when an organization pays for personnel, supplies, equipment, etc. for their own company with organizational resources. If the item or service is reimbursed for, it is cash cost share. All cost share items must be necessary to the performance of the project. **Contractors may not provide cost share.** Any partial donation of goods or services is considered a discount and is not allowable.

3. In Kind Cost Share - encompasses all contributions to the project made by the recipient, subrecipient, or third party (an entity that does not have a role in performing the scope of work) where a value of the contribution can be readily determined, verified and justified but where no actual cash is transacted in securing the good or service comprising the contribution. In Kind cost share items include volunteer personnel hours, the donation of space or use of equipment, etc. The cash value and calculations thereof for all In Kind cost share items must be justified and explained in the Cost Share Item section below. All cost share items must be necessary to the performance of the project. If questions exist, consult your DOE contact before filling out In Kind cost share in this section. **Contractors may not provide cost share**. Any partial donation of goods or services is considered a discount and is not allowable.

4. Funds from other Federal sources MAY NOT be counted as cost share. This prohibition includes FFRDC sub-recipients. Non-Federal sources include any source not originally derived from Federal funds. Cost sharing commitment letters from subrecipients and third parties must be provided with the original application.

5. Fee or profit, including foregone fee or profit, **are not allowable** as project costs (including cost share) under any resulting award. The project may only incur those costs that are allowable and allocable to the project (including cost share) as determined in accordance with the applicable cost principles prescribed in FAR Part 31 for For-Profit entities and 2 CFR Part 200 Subpart E - Cost Principles for all other non-federal entities.

6. NOTE: A Recipient who elects to employ the 10% de minimis Indirect Cost rate **cannot claim the resulting indirect costs as a Cost Share contribution.** **7.**

NOTE: A Recipient **cannot claim "unrecovered indirect costs"** as a Cost Share contribution, **without prior approval.**

8. Each budget period is rounded to the nearest dollar.

Organization/Source	Type (Cash or In Kind)	Cost Share Item	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	Total Project Cost Share
ABC Company **EXAMPLE!!!**	Cash	Project partner ABC Company will provide 20 PV modules for product development at the price of $680 per module	$13,600					$13,600
Land procurement for BESS installation	In Kind	KU land cost for BESS			$40,000			**$40,000**
Transformers	In Kind	Available from the inventory for this project	$280,000					**$280,000**
KU staff time	Cash	KU personnel cost to support the project (including fringe)	$60,814	$108,942	$204,742	$124,398	$75,104	**$574,002**
Smart Reclosers	Cash	KU distribution automation equipment cost	$343,308					**$343,308**
Padmount Recloser	Cash	KU distribution automation equipment cost	$114,125					**$114,125**
BESS O&M	Cash	KU cost to maintain BESS for availability and operation					$171,814	**$171,814**
Land preparation for BESS	Cash	KU land preparation cost prior to BESS installation			$110,000			**$110,000**
Travels	Cash	Travel expenses for the project kickoff, commissioning, testing and trainings	$3,630	$6,090	$6,090	$9,330	$3,630	**$28,770**
12 kV interconnection feeder upgrades	Cash	KU cost for feeder extension and upgrades for accommodating BESS interconnection to the grid	$45,000					**$45,000**
Fiber Communication construction	Cash	KU cost for establishing communication within Microgrid components for Microgrid operation and distribution automation scheme	$15,500					
Fiber Optics Splice	Cash	KU cost for establishing communication within Microgrid components for Microgrid operation and distribution automation scheme	$4,500					**$4,500**
		TOTAL COST SHARE	**$866,877**	**$115,032**	**$360,832**	**$133,728**	**$250,548**	**$1,711,519**

Total Project Cost: $4,739,481 **Cost Share Percent of Award: 36.1%**

Additional Explanation (as needed):

Applicant Name: Kaukauna Utilities Award Number: M9MMKLB6PDJ3

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget			
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)		Total (g)
1. Budget Period 1				$159,526	$866,877		$1,026,403
2. Budget Period 2				$1,965,017	$115,032		$2,080,049
3. Budget Period 3				$130,458	$360,832		$491,290
4. Budget Period 4				$440,722	$133,728		$574,450
5. Budget Period 5				$316,740	$250,548		$567,288
6. Totals				$3,012,462	$1,727,019		$4,739,480

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity					Total (5)
	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	
a. Personnel	$0	$0	$0	$0	$0	$0
b. Fringe Benefits	$0	$0	$0	$0	$0	$0
c. Travel	$3,630	$6,090	$6,090	$9,330	$3,630	$28,770
d. Equipment	$737,433	$1,854,579	$40,000	$300,000	$171,814	$3,103,827
e. Supplies	$4,500	$0	$0	$0	$0	$4,500
f. Contractual	$220,340	$219,380	$335,200	$265,120	$391,844	$1,431,884
g. Construction	$60,500	$0	$110,000	$0	$0	$170,500
h. Other	$0	$0	$0	$0	$0	$0
i. Total Direct Charges (sum of 6a-6h)	$1,026,403	$2,080,049	$491,290	$574,450	$567,288	$4,739,481
j. Indirect Charges	$0	$0	$0	$0	$0	$0
k. **Totals** (sum of 6i-6j)	$1,026,403	$2,080,049	$491,290	$574,450	$567,288	$4,739,481
7. Program Income						$0

Project/Performance Site Location(s)

Project/Performance Site Primary Location

☐ I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name: Kaukauna Utilities

UEI:

* Street1: Kaukauna Utilities (b) (4)

Street2: (b) (4) Street

* City: Kaukauna

County:

* State: WI: Wisconsin

Province:

* Country: USA: UNITED STATES

* ZIP / Postal Code: 54130-7077

* Project/ Performance Site Congressional District: WI-008

Project/Performance Site Location 1

☐ I am submitting an application as an individual, and not on behalf of a company, state, local or tribal government, academia, or other type of organization.

Organization Name: Kaukauna Utlities

UEI:

* Street1: Kaukauna Utilities (b) (4)

Street2: (b) (4) Street

* City: Kaukauna

County: Outagamie

* State: WI: Wisconsin

Province:

* Country: USA: UNITED STATES

* ZIP / Postal Code: 54130-7077

* Project/ Performance Site Congressional District: WI-008

Additional Location(s) Add Attachment Delete Attachment View Attachment

OMB Number: 4040-0004
Expiration Date: 11/30/2025

Application for Federal Assistance SF-424

* 1. Type of Submission:
- [ ] Preapplication
- [x] Application
- [ ] Changed/Corrected Application

* 2. Type of Application:
- [x] New
- [ ] Continuation
- [ ] Revision

* If Revision, select appropriate letter(s):

* Other (Specify):

* 3. Date Received: 05/19/2023

4. Applicant Identifier:

5a. Federal Entity Identifier:

5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:

7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: Kaukauna Utilities

* b. Employer/Taxpayer Identification Number (EIN/TIN): (b) (4)

* c. UEI: M9MMKLB6PDJ3

d. Address:

* Street1: 777 Island St
Street2:
* City: Kaukauna
County/Parish: Outagamie
* State: WI: Wisconsin
Province:
* Country: USA: UNITED STATES
* Zip / Postal Code: 54130-0777

e. Organizational Unit:

Department Name:

Division Name:

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:
* First Name: Clara
Middle Name:
* Last Name: Pickett
Suffix:

Title: Finance and Administration Director

Organizational Affiliation:
Employee

* Telephone Number: 920-462-0239
Fax Number:

* Email: cpickett@ku-wi.org

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

C: City or Township Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

National Energy Technology Laboratory

11. Catalog of Federal Domestic Assistance Number:

81.254

CFDA Title:

Grid Infrastructure Deployment and Resilience

*** 12. Funding Opportunity Number:**

DE-FOA-0002740

* Title:

BIL Grid Resilience and Innovation Partnerships (GRIP)

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Kaukauna Utilities Grid Resilience Project

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: 8
* b. Program/Project: 8

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 01/01/2024
* b. End Date: 12/31/2028

18. Estimated Funding ($):

* a. Federal	3,012,462.00
* b. Applicant	3,120,031.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	6,132,493.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☐ a. This application was made available to the State under the Executive Order 12372 Process for review on _____.

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☒ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 18, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix:

* First Name: Clara

Middle Name:

* Last Name: Pickett

Suffix:

* Title: Finance and Administration Director

* Telephone Number: 920-462-0239

Fax Number:

* Email: cpickett@ku-wi.org

* Signature of Authorized Representative: Clara Pickett

* Date Signed: 05/19/2023

Summary

Kaukauna Utilities Grid Resilience Project

Kaukauna Utilities (KU)
Eric Miller

Project Objectives:

The primary and secondary objectives of this project are:

- (Primary) Reliability and resiliency enhancement for an area in the KU distribution system that serves several critical facilities
- (Primary) Grid support and outage management by adding a grid-forming battery energy storage system (BESS) to stabilize the grid and provide hydroelectric plant black-start capability
- (Secondary) Gaining experience deploying a BESS and implementing feeder automation to unlock potential use cases (i.e. power flow management, load transfer, and energy arbitrage)

Methods:

This project includes designing, engineering, and implementing multiple distribution system applications and integrating a BESS into a critical area within the KU service territory. The KU distribution system is heavily operated by manual switching orders, relying on field crews and operators. The KU distribution system has extensive hydropower plants that can benefit from implementing modern load and generation management schemes to enhance stability and form a microgrid during widespread grid outages. To achieve these objectives, KU proposes:

1) Replacing and upgrading the existing manually operated tie breakers with smart reclosers to implement Localized Fault Location, Isolation, and Service Restoration.
2) Installing a 4 MW/4 MWh BESS near the (b) (4) Substation on the 12 kV side.
3) Installing and commissioning a microgrid control system that maintains load balancing using the BESS, allowing islanding and energizing critical loads served out of the (b) (4) and (b) (4) [redacted] Substations during outages.

Potential Project Impacts:

The major project impacts are summarized as follows:

- The project will improve system reliability (by about 20%) through enhanced service restoration and forming an islanded area that covers critical service providers.
- The project will assist with maintaining low-cost rates and reliable service to KU customers and accelerate necessary infrastructure improvements. It will help reduce the financial burden on our ratepayers to achieve grid modernization objectives.
- The project will help KU gain the knowledge and expertise to deploy advanced technologies, including D-FLISR, BESS, and microgrids.

Major Participants:

Kaukauna Utilities (KU)

Supporting Partners:

WPPI Energy

Technical Volume

Project Title

Kaukauna Utilities Grid Resilience Project

Specific Announcement Topic Area Being Addressed

Topic Area 3

Technical Point of Contact:
Name, Position Title: Eric Miller, Manager of Engineering & Project Management
Address Line 1: 777 Island Street
Address Line 2: Kaukauna, WI 54130
Phone: 920-462-0214
Email: emiller@ku-wi.org

Business Point of Contact:
Name, Position Title: Clara Pickett, Finance & Administration Director
Address Line 1: 777 Island Street
Address Line 2: Kaukauna, WI 54130
Phone: 920-462-0239
Email: cpickett@ku-wi.org

Applicant Entity Type: Kaukauna Utilities (KU) is a community-owned, operated, not-for-profit electric and water utility

Team Member Organizations: Kaukauna Utilities

Project Location: Kaukauna Utilities' service territory (various locations)

Statements Regarding Confidentiality: N/A

1 Project Overview

1.1 Background

Kaukauna Utilities (KU) is a community-owned and operated non-profit electric and water utility serving approximately 16,000 customers in Kaukauna, Wisconsin, and is regulated by the Public Service Commission of Wisconsin. KU has 33 distribution circuits energized at 12 kV. These predominantly overhead circuits are designed following the conventional approach: coming out of a substation through a breaker, going through the lines to the location of customers' loads, and ending where the voltage is transformed down to 120 V/240 V for customer service. The circuits have several open points that can be manually tied to other 12 kV circuits via manual tie switches. These tie switches allow substation maintenance and partial power restoration during grid faults. Seven run-of-river hydroelectric plants provide 30% of the annual customer demand. These plants are connected to 12 kV systems across the feeders or directly to substation buses. Presently, the automatic operating and switching of KU distribution systems are limited to the substation and feeder-head circuit breakers. When required, the utility crew must manually switch (open or close) all other tie switches and isolation switches across the 12 kV feeders or even the 34.5 kV lines supplying the distribution substations.

On the other hand, hydroelectric plants do not have black start and off-grid operation capability (for voltage and frequency regulation). Therefore, they would trip offline for any loss of the 12 kV upstream systems tied to them. This matter also affects any ability to restore power locally and supply customers even though the hydroelectric production surpasses the load in major substations. The hydroelectric plants' black-start and restoration procedure calls upon using diesel and/or natural gas generators (upon availability) to energize the 12 kV bus supplying the plants.

In a recent major outage (May 1, 2022) caused by an upstream fault at a central 34.5 kV substation, 6,000 customers lost power between 45–90 minutes while the crew performed manual reconfiguration to loop in a neighbor 12 kV substation. During the outage, the river's water level also started to increase and created localized flooding due to a stoppage in the operation of the hydroelectric plants and the closing of the gates that regulate water levels.

1.2 Project Goals

The primary goal of this project is to increase the reliability and resiliency in an area that serves approximately 6,000 KU customers, including several critical facilities (wells, water treatment, utility dispatch center, emergency services, shelters, etc.), as well as three major hydroelectric generation plants. The area mainly consists of two substations: [redacted] and [redacted] The reliability and resiliency improvements are provided by the following use cases supported by a grid-forming battery energy storage system (BESS) integration:

- Implementing distribution automation (DA) for fault clearing and service restoration to customers following faults on distribution feeders using automated feeder reconfiguration and reclosing schemes.

- Grid support and outage management by adding a microgrid-forming BESS to stabilize the grid and providing black-start capability for hydroelectric plants to create a locally 100% renewable generation-based microgrid.
- Load and generation balancing through BESS support and automated load transfer schemes.

The secondary goal of the project is to gain experience with the deployment of BESS and implementation of feeder automation to unlock additional potential use cases, such as:

- Reverse power flow management
- Power firming (managing generation fluctuations)
- Load transfer (when an alternate distribution substation does not have enough transfer capacity)
- Energy arbitrage for optimizing demand supply through local renewable generation (future application)

KU is looking to increase the resiliency and reliability of its renewable hydroelectric generation-based grid through battery energy storage system (BESS) integration. This will allow distribution system automation with almost instantaneous isolation of multiple sections during faults, reducing the number of customers impacted by an outage. Furthermore, these actions will be communicated instantaneously to the Outage Management System (OMS) of the System Operations Center (SOC) to dispatch resources to remedy the cause of the isolated outage. Therefore, crews responding to the isolated outage will investigate a significantly smaller area to locate the cause of the outage, resulting in an overall decreased outage duration and gained efficiency in operation (reducing cost). In addition, this project will enable the upgrading of KU's grid infrastructure. This will be done by expanding the existing fiber optic networks, enhancing feeder monitoring and observability, adopting advanced reclosers, adding the ability to reconfigure the grid (reducing customer downtime) automatically, and forming microgrids.

The primary and secondary goals are aligned with FOA's objectives of Topic Area 3, Grid Innovation Program, by "ensuring reliable grid operation, improving grid resilience, a collaborative initiative between private and public sectors to work on grid resiliency, decarbonization with support of grid resilience, reliability and affordability, and enhancing system value."

1.3 DOE Impact

This DOE funding will assist with maintaining low-cost rates and reliable service to KU customers and accelerate necessary infrastructure improvements. The utility's budget for implementing the proposed grid modernization and reliability enhancement is slated to extend beyond our 10-year budget. The acquisition of DOE grant funds would help reduce the financial burden on our ratepayers to achieve grid modernization objectives. It will also allow KU utility to accelerate this necessary system improvement and gain the knowledge and expertise to deploy advanced technologies.

1.4 Community Benefits Plan

1.4.1 Community and Labor Engagement (C&LE)

KU is dedicated to meeting our customers' needs while helping to make the community a better place to live and work. Customers can actively participate in the decision-making process of their public power utility. KU's commitment to the community is founded on the following principles: 1) reliable energy, 2) trust, 3) community assets, 4) customer service, 5) environmentally friendly, and 6) lower-cost energy.

KU will establish a community benefits agreement specific to this project. The agreement will seek to co-create strategies, to the extent feasible, for the implementation and deployment of technologies to maximize community resilience while also minimizing implementation disruptions (e.g., construction processes).

1.4.1.1 Community Engagement

As a community-owned utility, KU is committed to community engagement and holds to community values by encouraging community members to have an active voice and join in on decisions about municipal utility operations during open public meetings.

Locally, KU actively participates in the Chamber of Commerce. As an active member of the Chamber of Commerce since 1978, we have been constantly networking with other local businesses to share valuable information and improve the local economy. KU also serves as part of the federally recognized Tribal Government Oneida Nation of Wisconsin's Reservation.

KU engages the community through various community and education programs, such as the Minneapolis-based National Theatre for Children. KU provides educational materials and presentations to schools, service groups, and seniors. This includes Pedal Power, a bicycle-powered generator that teaches basic scientific concepts related to energy conversion, and PowerTOWN, an eight-foot education utility model. It also includes a working solar demonstration model. KU also offers facility tours to school groups and youth organizations and provides scholarship opportunities for local high school students to attend a post-secondary educational institution, including scholarships for students enrolling in the Electrical Power Distribution Program at one of the five technical colleges in Wisconsin where the program is offered.

KU also uses communication channels, including (but not limited to) social media campaigns, the KU company website, the company's quarterly newsletter, and other channels, such as print advertisements in the local newspaper, in-person community briefings/events, and direct mailing to those directly affected to keep our customers informed and involved.

1.4.1.2 Contracting

As a public entity, KU strives to provide opportunities to local contractors by publishing bidding documents via local media outlets. During the bidding process, KU will solicit bids from qualified local contractors, ensuring contractors with local labor pools are used to complete the project.

These organizations are vested in using local contractors to complete quality projects that make a difference in the community.

1.4.2 Job Quality and Workforce Continuity

This project will greatly improve the reliability and resilience of the KU electric distribution system for all customers, including all large customers within our service territory. These large customers are national corporations that employ thousands of local workers and provide competitive wages. The potential microgrid system, which mitigates service disruption, could reduce any revenue loss from power outages at these large corporations. The system improvements will also attract business owners to the area with opportunities for commercial and industrial facilities to operate within KU's reliable and resilient service territory.

1.4.3 Diversity, Equity, Inclusion, and Accessibility

KU is an equal opportunity employer that strives to maintain workplace diversity and equality. We are committed to ensuring that our organization recruits, hires, trains, and promotes, at all levels, the most qualified applicants without regard to race, color, religion, sex (including gender identity, sexual orientation, and pregnancy), national origin, age, disability, genetic information, veteran's status, or any other protected class that exists now or in the future.

KU project team consists of engineers and individuals with extensive backgrounds in the science and technology fields. We also promote the pursuit of STEM careers through our internship program. Through this internship program, we hire local students pursuing STEM careers and provide valuable on-the-job experience.

1.4.4 *Justice40 Initiatives*

According to the Climate and Economic Justice Screening Tool, the area adjacent to the KU central office building in Figure 1 lies within the City of Kaukauna, which falls in the 69th percentile for low-income households and is identified as a disadvantaged community (DAC). In addition, KU provides service to an area of the federally recognized Oneida Nation of Wisconsin Reservation (the northernmost polygon in Figure 1). This project will improve the reliability and resilience of all KU customers, including our DACs.

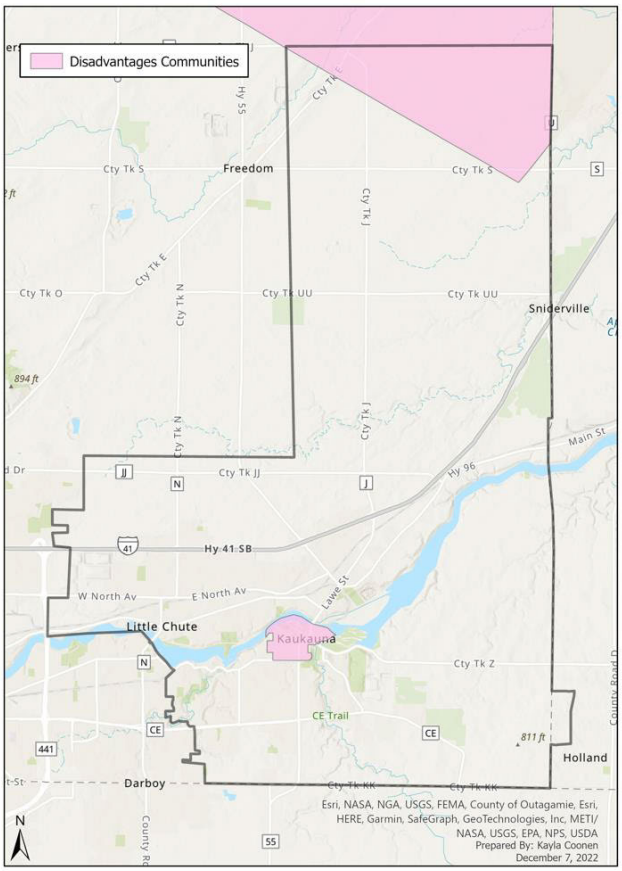

Figure 1. Kaukauna Utilities Map

1.5 Strategy for Sharing and Maximizing the Project's Benefits

KU will maximize the benefits through these elements:

- Non-profit community and labor engagement in open public meetings
- Educational program funding and scholarships
- Contract bidding opportunities for local companies and companies listed as disadvantaged business enterprises (DBEs)
- Revenue loss reduction for large corporations served by KU, improving job security factors
- DAC engagement and improved accessibility

1.6 Potential Long-Term Constraints

There are no long-term constraints identified for the project. However, a cleaning strategy-based on the end-of-term disposal of the BESS would be required. It is expected that by the end of the project lifecycle (after 15 years), the methodology of BESS disposal will be further advanced, resulting in environmentally friendly disposal of the BESS. Additionally, the BESS vendors will be required to provide disposal methodologies for the solutions to help KU consider battery disposal when selecting a vendor as well.

1.7 Climate Resilience Strategy

The United States' Midwest region has experienced increasingly severe storms in the recent past causing extended power outages that seriously impact people's safety and well-being. Considering KU's hydroelectric generation, storms with heavy rainfalls can potentially cause river flooding, disrupting hydroelectric generation. To decrease the impact of these storms and river flooding, there is a need to increase the power grid resiliency and reliability through BESS deployment with KU's grid. During storms, BESS can supply power to targeted critical infrastructure such as hospitals, emergency services, and community centers that provide shelter and assistance to those affected by the storm. Using BESS can help reduce the duration of outages people experience, improving their safety and well-being. In addition, BESS deployment can reduce river flooding and keep hydroelectric generation running.

Severe temperatures around -20 °F might impact hydroelectric generation in numerous ways. Firstly, it may cause the reservoir or lake to freeze, preventing water from flowing into the turbines and thus dropping the electricity generated. Secondly, extremely cold temperatures can thicken the oil used in hydroelectric generation, making it difficult for the turbines to operate smoothly. Lastly, the extreme cold can also cause pipes and other equipment to freeze or malfunction, reducing the amount of electricity produced. Under these conditions, an outage would quickly become a community-wide health and safety issue. Therefore, BESS integration with the KU grid **the operation of the grid will improve and will reduce the stress on the hydroelectric generation during outage events under severe winter conditions.**

2 Technical Description, Innovation, and Impact

2.1 Relevance and Outcomes

The relevant Area of Interest for this project is "*Topic Area 2: Distribution System Applications*". The project includes designing, engineering, and implementing multiple unique distribution system applications and integrating a BESS at the (b) (4) a critical area within the KU service territory. The project brings multiple components essential to the emerging technology enablement roadmap for the KU grid modernization. The KU distribution system (including the target area of this project) in its current state is heavily operated traditionally by using manual switching orders and relying on field crews and operators' decisions for responding to any emergency, including post-fault service restoration and outage management. Moreover, the KU distribution system has multiple hydroelectric plants that can benefit from implementing modern load and generation management schemes to enhance stability and form a microgrid during widespread grid outages.

Despite multiple hydroelectric plants within the community, KU presently relies on a few 34.5 kV substations (fed from a 138 kV transmission system) for grid stability and power management. KU also has a natural gas-fired power plant that can black-start the hydroelectric plants during prolonged outages of the 138 kV system. The BESS would help eliminate the use of the gas-fired plant, effectively reducing KU's carbon footprint as well as interruption duration. The project targets implementing and demonstrating several state-of-the-art grid modernizations use cases for reliability and resiliency enhancement unique to the region's local utilities and electric service providers. It will provide a major opportunity for knowledge and experience gaining of emerging technologies. The project use cases are focused on various aspects of reliability and resiliency to strengthen the service delivery to the customers and community, which include:

- Implementing a distributed FLISR scheme by upgrading the manual feeder sectionalizing switches to new automated smart reclosers and expanding the fiber optic network to achieve highspeed communications and monitoring for successful deployment of the automation schemes.
- Deploying and integrating a grid-forming BESS will provide grid stability enhancement and generation management for operating hydroelectric plants independent from the main grid to prevent local outages or enable fast recovery after a major upstream grid outage (on either the 34.5 kV or 138 kV transmission systems).
- Implementing and demonstrating a hybrid microgrid covering customers and critical facilities on multiple distribution feeders (in one substation) with the ability to tie in and expand to an adjacent substation. The microgrid will use advanced load and generation management systems to sustain local grid operation with access to renewable power production from three hydroelectric plants.

The primary and secondary project goals and outcomes are aligned with the demonstration of technologies, solutions, and advanced functionalities mentioned in Area of Interest 2, Distribution System Applications, in the DOE FOA's documents for the development of intelligent and automated distribution system applications with a focus on enhancing reliability and resilience. For instance, these deliverables are:

- Providing adaptive microgrid formation and reliable islanded operations
- Demonstrating reliable and resilient system operations using distributed renewable generation and energy storage levels
- Black-start capable systems minimizing negative impacts during power grid disruptions

Furthermore, secondary goals can be projected into providing grid services (demand response, etc.), which are aligned with area Interest 2 stated by the DOE in the FOA's document.

2.2 FEASIBILITY

2.2.1 Availability and Interconnection Option for BESS Deployment and Future Scalability

BESS deployment is a key component of this project. KU has land availability close to the target ([redacted] (b) (4) The available land is easily accessible and space-wise sufficient to deploy the BESS required for this project. [redacted] (b) (4) also has a spare circuit breaker (a full bay, originally included for future expansion) to interconnect the BESS to the substation bus. The land availability and the supporting interconnection infrastructure will ensure that the BESS part of the project can be implemented on time and will reduce the risk of any cost overrun due to land acquisition and environmental permitting that can add to the complexity and project duration. This also brings some level of cost saving for the project. An aerial view of the proposed site location, along with the potential BESS footprint, is shown in Figure 2. In addition, the future scalability of the BESS is possible as the initially planned location of the BESS is enough for future upgrades to cover multiple substations and build clustered microgrids.

2.2.2 Existing Fiber Optic Cable Coverage

KU's grid infrastructure has a wide coverage of fiber optic cables to the substations. The existing fiber optic coverage would facilitate the implementation of the proposed DA scheme (including FLISR) and enable high-speed communications to reclosers (across the feeders), circuit breakers (at the feeder head at the substation), and hydroelectric power plants that are essential for microgrid operation. New fiber optic network expansions will cover additional feeder reclosers for increasing reliability.

2.2.3 Tie Points Availability for DA Implementation

KU's grid has multiple open tie points between various feeders of [redacted] (b) (4) and with the feeders of [redacted] (b) (4) The already existing tie points provide an opportunity to replace them with reclosers to deploy DA to localize the impact of faults on customers and critical facilities, automatic grid clustering into multiple operating regions for maximizing the use of hydropower production, and effective sectionalizing for feeder reconfiguration and service restoration. This will strengthen the success rate for executing the proposed project and minimize the risk by properly managing any unexpected challenges and reducing the cost of implementation.

(b) (4)

Figure 2 Proposed BESS Site Location

2.3 Innovation and Impacts

2.3.1 Localized FLISR Scheme

Fault location, isolation, and service restoration (FLISR) on power distribution networks can improve reliability and availability by minimizing the number of customers affected by a fault. Localized FLISR provides a methodology to implement the FLISR control logic in distributed intelligent electronic devices (IEDs) through peer-to-peer communications. The solution includes decoding the steady-state operation of the system, performing fault detection and isolation of faulty sections, and restoring the (healthy part of) power network. The FLISR logic is implemented in each IED, reducing the need for a central controller. The approach benefits from non-directional fault detection and isolation, which removes the requirements for voltage measurements on each segment. This is achieved through communications with neighboring IEDs, as shown in Figure 3. The figure shows the feeders of the two substations, BAS and ANS, where recloser upgrades are planned. Reclosers R1 through R8, along with the feeder head breakers for Feeders 4120, 4125, 35122, and 35124, will be used to realize a localized FLISR scheme implementation.

2.3.2 N-3 Contingency Minimizing Internal Fault Impact on Customers, Extending Load Durations

Integrating BESS with KU's hydroelectric power generation will strategically provide N-3 contingency capability. The BESS will provide seamless backup power in the event of a contingency caused by overloading conditions. Furthermore, this will also improve KU grid transient operation in sudden under-frequency events that could trigger the frequency protection relays. The BESS can also help in generation and load balancing and help provide slack in light load conditions, and potentially improve KU grid transient operation during sudden over-frequency events that might trigger the protection relays. Therefore, BESS integration with the KU grid will improve customers' experience by minimizing outage durations due to faults. BESS integration will also reflect positively on customer experience indirectly as the quality of electric service delivered improves.

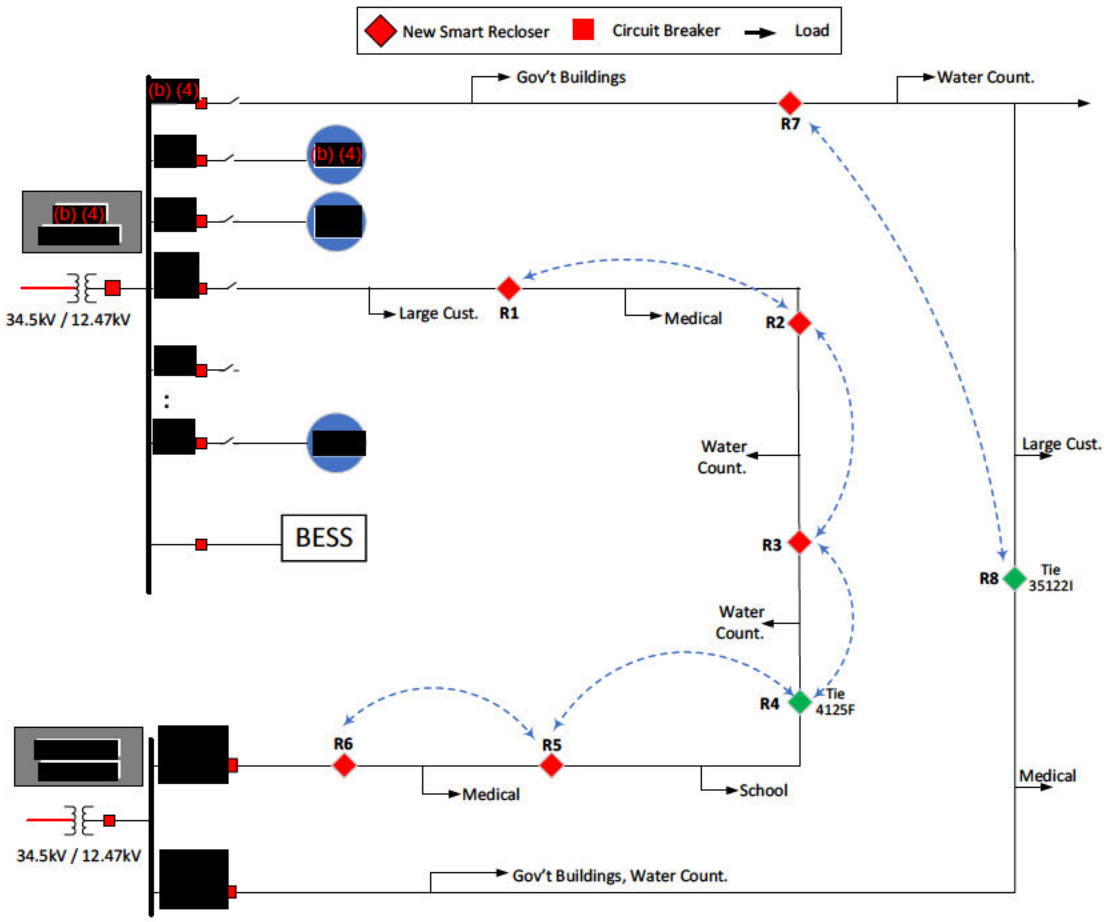

Figure 3 Distributed FLISR Scheme Illustration through Neighboring IED Communication

2.3.3 Seamless Transfer Capability, Black-Start, and Outage Management with 100% Renewable Base Grid

The BESS-enabled seamless capacity transition and black-start capabilities allow a critical portion of KU's distribution network to be fed by 100% renewable generation (hydro) during major grid outages. The BESS will supplement generation capacity during peak demand periods or when renewable sources are unavailable. Even though hydroelectric generation is highly reliable and

100% renewable, this generation still experiences downtime due to maintenance work or natural disasters. In these downtimes, BESS can provide backup power to the grid, ensuring the supply is maintained.

Seamless capacity transition is achieved when there is a smooth transition between different power generation sources on the grid. When hydroelectric generators cannot meet the electricity demand during an outage, BESS is activated, and power is drawn from the batteries to supplement the grid's generating capacity. When the power demand reduces, the excess energy generated by the hydroelectric generators is stored in the BESS, ready for use during the next peak demand period. This method of seamless capacity transition ensures that the grid operates at peak efficiency and fulfills the needs of all customers.

In the event of a power outage, a hydroelectric generation-based grid with BESS support can use black-start capabilities to restart the grid. The hydroelectric plants on KU's network cannot operate in the grid forming mode and therefore have to be tripped offline during outages from the 138 kV transmission system. Adding a BESS is expected to mitigate the impact of downtime on the customers. The BESS can provide immediate backup power during the start-up process, ensuring critical systems (such as traffic control, water pumping and treatment, sewer treatment facilities, emergency services, and shelters) continue to operate. This will also eliminate KU's current grid black-start/downtime support methodology that utilizes a 60 MW gas turbine, thus reaching a 100% renewable-based power grid with BESS integration and reducing KU's already small carbon footprint.

2.3.4 Reliability Enhancement with Extended Operation

BESS deployment will significantly improve the reliability and extend the operation of KU's hydroelectric generation-based grid from these perspectives:

- **Smoothing power output:** Hydroelectric generation is variable due to natural changes in water levels and flow rates. Therefore, BESS will smooth out these fluctuations in power output by storing excess energy during low-demand periods and releasing it during high-demand periods.
- **Frequency regulation:** Hydroelectric generation grids typically rely on synchronous generators that require precise frequency control to maintain a stable grid. BESS will provide fast and accurate frequency regulation by responding to changes in grid frequency and adjusting power output accordingly, thereby reducing the dependence on the 138 kV transmission system, especially during light load and high-generation emergency conditions.
- **Black-start capability:** In a grid outage, a BESS can provide the necessary power to restart a hydroelectric plant and restore power to the grid much quicker than the current natural gas-fired power plant method.
- **Backup power:** BESS can be an emergency backup power source when hydroelectric generation is insufficient, such as during droughts or low water flow periods.

3 WORKPLAN

3.1 PROJECT OBJECTIVES

KU intends to upgrade its network to provide customers with a higher quality and more reliable power supply. Specifically, the project objectives are as follows:

- Install a BESS at the BAS that provides grid support and stability in grid-connected mode.
- Use the installed BESS for improved outage management and for providing black-start capability with hydroelectric plant energization, replacing the gas-fired power plant.
- Install the communication and automation infrastructure on the selected areas of the KU network to unlock faster load restoration using distribution and generation automation schemes (including FLISR) enhanced by the BESS.

3.2 TECHNICAL SCOPE SUMMARY

There are multiple high-level technical scopes of this project, and they are summarized as follows:

- Replacing and upgrading the existing manually operated normally open switches with smart reclosers that tie the (b) (4) [redacted] feeders.
- Implementing a FLISR scheme on the (b) (4) [redacted] feeders to ensure timely service restoration to the customers fed by the two substations in case of a fault.
- Installation of a 4 MW/4 MWh BESS on the (b) (4) [redacted] at the 12 kV side using the spare feeder location and extending it to the property across the street via an underground feeder.
- Installation and commissioning of a microgrid control system that maintains load balancing and balancing using the BESS to allow islanding and energizing critical loads in the (b) (4) [redacted] during outages.

3.3 BUY AMERICA REQUIREMENTS FOR INFRASTRUCTURE PROJECTS

This project involves installing new equipment on the existing KU network and upgrading some aspects of the communication infrastructure. As of this submittal, all products meet this requirement.

3.4 WORK BREAKDOWN STRUCTURE (WBS) AND TASK SUMMARY

The following tables detail how the work for the three budget periods will be structured. The deliverables associated with the tasks and subtasks are detailed in the SOPO.

Table 1. Work Breakdown: Budget Period 1 (2024)

Task/Subtask	Description
Budget Period 1	Budget Period 1 mainly consists of system upgrades required for the initial phase of the project as well as engineering and project management for all phases of the project. Project management is also included.

Task/Subtask	Description
Task 1: Project Management	This task includes all the project management aspects, including the documentation and reporting requirements. This task starts in the first budget period but continues to the following periods.
Subtask 1.1: Project Management Plan (PMP)	Within 30 days of the award, the Recipient shall submit a Project Management Plan (PMP) to the designated Federal Project Officer (FPO). The Recipient shall not proceed beyond Task 1.0 until the FPO has accepted the PMP.
Subtask 1.2: NEPA Compliance	This task includes working with DOE to ascertain the project's required NEPA compliance documents, preparation, and submission.
Subtask 1.3: Cybersecurity Plan (CSP)	The CSP shall be revised and resubmitted as often as necessary during the project to capture any major/significant changes.
Subtask 1.4: Continuation Briefing(s)	The Recipient will brief DOE roughly annually to explain the technical effort's plans, progress, and results. The briefing shall also describe performance relative to project success criteria, milestones, and the Go/No-Go Decision point documented in the Project Management Plan (PMP).
Subtask 1.5: EPC Plan	This subtask includes developing a plan and the initial schedule for the project's Engineering, Procurement, and Construction (EPC) for the duration of the project (i.e., various budget periods).
Subtask 1.6: Kickoff and Progress Meetings	This subtask covers the kickoff effort and the first meeting among the project stakeholders. The meeting will be scheduled after the DOE accepts the PMP and receives a go-ahead for the project.
Task 2: System Upgrades	This task involves the system upgrades that KU will perform on their system to allow the deployment of the DA schemes.
Subtask 2.1: Systems Upgrade and Integration Plan Development	This subtask involves developing a plan to upgrade the reclosers, communications, and EPC schedule development to prepare the KU infrastructure to support the deployment of the KU system's distribution and generation automation schemes. This subtask also includes preparing the specifications and the RFP packages to procure the upgraded equipment.
Subtask 2.2: Procurement of Smart Reclosers and Communication Infrastructure	This subtask includes the procurement process for the identified reclosers to be upgraded along with the fiber communication network to integrate the smart reclosers, the microgrid controller, the tie circuit breakers, the generation controls, and the BESS site controller. This also includes the publication of RFPs, bid evaluation, and vendor selection processes.
Subtask 2.3: Standards & Settings Development	This subtask includes creating new or revising existing engineering standards for smart recloser installation and their settings to be upgraded along with the BESS site controller, microgrid controller, and hydro generation controllers.
Subtask 2.4: Fiber Communication Upgrades	This subtask refers to the efforts and time required to upgrade and extend the fiber communication links to the smart reclosers and the upgrades required to establish communications between the microgrid controller, tie circuit breakers, BESS site controller, and hydro generation controllers.
Subtask 2.5: Installation of 12 kV Interconnection Feeder	This subtask refers to the 12 kV feeder required to connect the BESS to the (b) (4) [redacted] This involves extending the spare feeder connection point on the (b) (4) to the site across the street where the BESS is planned to be sited.
Task 3: Distribution and Generation Automation	This task involves designing, developing, and deploying the distribution and generation automation schemes to allow load and generation balancing via feeder reconfiguration, FLISR, and the adaptive protection philosophy and scheme to support the said automation.

Task/Subtask	Description
Subtask 3.1: FLISR Scheme Design and Reliability Studies	This subtask includes the design of the distributed FLISR scheme involving the existing and upgraded reclosers that can communicate with each other. This includes the communication protocol specifications most suitable for implementing such a scheme. It also includes finalizing the feeders for implementing the FLISR schemes. The FLISR scheme will be finalized, and its effectiveness will be measured by conducting reliability studies with and without the scheme implemented on the selected feeders.
Task 4: BESS	This task includes the BESS plant's design, specifications, procurement, deployment, and commissioning.
Subtask 4.1: BESS System Design	This task involves the 30% system design of the BESS plant, including the electrical design of the AC side, inverter, and DC system, site design, the control and communication architecture of the site, and protection and safety system design.
Subtask 4.2: BESS Specifications	This subtask includes the specifications of the equipment used in the BESS plant. It includes the site controller, battery management system, battery specifications, inter-plant and upstream communications, control modes and functionality, and contractual specifications. This task also includes preparing an RFP package based on the specifications developed.
Task 5: Hybrid Microgrid	This task includes the overall microgrid design, studies, specifications definition, procurement, integration, testing, commissioning, and performance evaluation of the distribution and generation automation schemes, BESS plant, and the microgrid operating together.
Subtask 5.1: Microgrid Design	This subtask includes the 30% design of the microgrid, including the control and communication architecture, the critical and non-critical loads management by the microgrid controller, islanding and grid connection scenarios, protection schemes, and settings for all the microgrid modes of operation.
Task 7: CBP	The CBP execution occurs throughout the project.
Subtask 7.1: Community and Labor Engagement (C&LE)	This task involves the development of a Community Benefits Agreement in the first year of the project, including follow-up community engagement workshops held twice yearly.
Subtask 7.3: Diversity, Equity, Inclusion, and Accessibility (DEIA)	As part of this subtask, KU will ensure that all the RFPs and relevant bidding documents reach minority or women-owned business enterprises (MWBEs) for awareness and to ensure that qualified bids are accessible and responded to by various suppliers.
Subtask 7.4: Justice40 Initiatives	This subtask involves increasing access of DACs to 100% renewable hydroelectric generation and encouraging the local disadvantaged business enterprises (DBEs) to participate in the competitive RFPs for the various aspects of the projects. The utility will then expand the educational scholarship opportunities we offer students to include additional STEM-related fields (such as battery storage and microgrids).

Table 2. Work Breakdown: Budget Period 2 (2025)

Task/Subtask	Description
Budget Period 2	The second budget period mainly focuses on implementing distribution and generation automation and starting the BESS procurement process.
Subtask 3.2: Load/Generation Balancing and Feeder	This subtask involves the development of the load and generation balancing scheme using feeder reconfiguration. The load on the feeders will be monitored, and a logic that helps maximize the use of hydro generation by adding more load from the (b) (4)

Task/Subtask	Description
Reconfiguration Scheme Development	(b) (4) [redacted] in case of overgeneration on the (b) (4) [redacted] will be developed using system modeling and simulations. A performance evaluation plan to monitor the performance of the load and generation balancing scheme will also be developed as part of this subtask.
Subtask 3.3: Adaptive Protection Studies and Philosophy Development	A detailed protection study will be performed to develop the most effective adaptive protection philosophy and scheme that provides coverage for all the various feeder and inter-tie switch configurations, along with the variations in the hydro generation plants that are active at a time.
Subtask 3.4: Deployment and Integration	This subtask covers the deployment and integration testing of the DA schemes on the smart reclosers, inter-tie switches, and sectionalizes. It also includes the integration of the reclosers to KU's SCADA telemetry allowing remote monitoring and control of the smart reclosers.
Subtask 3.5: FLISR Testing and Commissioning	This task includes the testing and commissioning of the FLISR and feeder reconfiguration. This includes testing the FLISR scheme on a real-time digital simulation (RTDS) based hardware-in-the-loop (HIL) testbed. It includes the test plan development, approval and execution, and eventual commissioning of the FLISR and DA scheme. Once commissioned, the scheme is expected to go live and stay in production.
Subtask 4.3: BESS Procurement	This subtask includes the RFP publication, vendor response evaluation, and vendor selection.
Subtask 4.4 BESS Deployment	This subtask involves the 100% design, engineering, procurement, and construction of the BESS plant by the selected vendor. The tasks include design approval, test plan development and approval, and obtaining permits.
Subtask 7.2: Workforce Initiatives	This subtask includes reallocating a recently created FTE at KU to support the technologies installed with this proposed project and hiring interns to train them on new technologies, such as the BESS and microgrids, from the technical schools in Wisconsin. In addition, KU will contract local companies for much of the construction and installation of the project equipment.

Table 3. Work Breakdown: Budget Period 3 (2026)

Task/Subtask	Description
Budget Period 3	This budget period mainly includes the BESS deployment, commissioning, and reliability studies on the integrated solution.
Subtask 4.5: Commissioning of BESS Plant	This includes the final integration, site acceptance testing (SAT), commissioning, and the go-live of the BESS plant.
Subtask 5.2: Microgrid Stability Studies and Specifications Development	This subtask involves performing microgrid stability studies and developing specifications of the microgrid equipment, especially the microgrid controller.

Table 4. Work Breakdown: Budget Period 4 (2027)

Task/Subtask	Description
Budget Period 4	This budget period includes the specs, procurement, and integration of the microgrid and the MGCS.

Task/Subtask	Description
Subtask 5.3: Microgrid Control System (MGCS) Procurement and Installation	Once the specifications of the MCGS are developed, this subtask involves the procurement of the MCGS. This includes creating the RFP package, publication, vendor response evaluation, and vendor selection. Once the vendor is selected, they are expected to complete the 100% microgrid design and install the microgrid controller at the [redacted] (b) (4)
Subtask 5.4: Integration of MGCS into BESS, FLISR, and SCADA	This task includes the studies in designing the coordination required between the MGCS, the BESS site controller, and FLISR reclosers. It also includes the integration of MGCS with the BESS controller, FLISR reclosers, and KU's SCADA telemetry, ensuring the systems can communicate.
Subtask 5.5: Testing and Commissioning of MGCS	This subtask includes the testing and commissioning of the MGCS. This includes testing the MGCS and its functionality on an RTDS-based hardware-in-the-loop (HIL) testbed, developing and approving a test plan for the site acceptance testing, and the go-live of the microgrid control system.

Table 5. Work Breakdown: Budget Period 5 (2028)

Task/Subtask	Description
Budget Period 5	This budget period includes integration, testing, demonstrating, and commissioning the integrated solution of MGCS, BESS, and DA schemes.
Subtask 5.6: Training and Performance Evaluation during Load/Generation Balancing and Outage	This subtask includes training the KU employees to operate and maintain the BESS. It also includes monitoring and performance evaluation schemes during outages. The subtask starts as soon as the overall system is commissioned and goes live till the end of Budget Period 5.
Task 6: Review and Close	This task involves the closing tasks, including the final project briefing to the DOE.

3.5 Milestone Summary

The following table summarizes quarterly project milestones.

Table 6. Quarterly Project Milestones: Budget Period 1

Period	Items and Description
Q1	1.1: PMP submitted to the FPO within the first 30 days of the grant award and within the first 30 days of the start of the subsequent years. 1.2: Submission of the NEPA compliance documents. 1.3: First cybersecurity plan for the project to be developed and submitted along with the PMP (at the beginning of the project and then each subsequent year). 1.4: Project continuation briefing reports submitted. 1.5: Kickoff meeting to be held among the project stakeholders, with final PMP, NEPA, and CSP distributed to the attendees.
Q2	2.1: System upgrade plan finalized, and system upgrade RFPs published (i.e., specifications defined for the smart reclosers and communication upgrades). 4.1: BESS system 30% design complete. 7.1: Community engagement workshop held, repeated every six months till the end of the project.
Q3	2.2: System upgrade vendor(s) evaluated and selected.

Period	Items and Description
Q4	1.6: An EPC plan developed in the quarter after the design phase of the distribution and generation automation work, the BESS plant, and the hybrid microgrid is completed and approved by the stakeholders. 2.3: The 12 kV feeder off the (b) (4) for the BESS interconnection is installed. 2.4: Fiber installation completed, extending the existing fiber network to the reclosers at the substation and downstream. 2.5: All system upgrades completed to support the interconnection and deployment of the distribution and generation automation schemes, FLISR schemes, adaptive protection schemes, BESS plant, and the hybrid microgrid and its control system. 3.1: FLISR scheme developed for the selected feeders with a performance evaluation on the system model for reliability studies. 7.2: Community Benefits Agreement developed and signed.

Table 7. Quarterly Project Milestones: Budget Period 2

Period	Items and Description
Q1	1.7: Revised PMP, CSP submitted. 1.8: BP1 continuation briefing held. 2.6: Standards on the installation and integration of smart reclosers, MGCS, BESS, generation controllers, and communications developed and approved by the stakeholders. 4.2: BESS system specifications complete and RFP. 5.1: Hybrid microgrid and its microgrid control system 30% design complete.
Q2	3.2: Adaptive protection philosophy developed for the various modes of feeder and switch configuration and combinations of generation and load. 5.2: Plan and specifications for integrating the MGCS, BESS, FLISR, smart reclosers, and the KU SCADA telemetry system developed and approved by the stakeholders.
Q3	3.3: FLISR scheme RTDS and HIL testing complete. 3.4: Integration testing of FLISR, BESS, and SCADA
Q4	3.5: FLISR scheme commissioned and online. 4.3: BESS system vendor evaluated and selected.

Table 8. Quarterly Project Milestones: Budget Period 3

Period	Items and Description
Q1	1.9: Revised PMP, CSP submitted. 1.10: BP2 continuation briefing held. 5.3: Training strategy for FLISR and BESS developed.
Q2	3.6: Reliability studies done with FLISR.
Q3	4.4: Deployment and EPC of the BESS plant completed.
Q4	4.5: BESS plant commissioned and online.

Table 9. Quarterly Project Milestones: Budget Period 4

Period	Items and Description
Q1	1.11: Revise PMP, CSP submitted. 1.12: BP3 continuation briefing held.
Q2	5.4: Stability studies for the various microgrid modes and transitions completed. 7.3: Full-time position reallocated at KU to handle innovative technologies. 5.5: Personnel training complete for BESS operation and maintenance. 5.6: Microgrid control system specifications developed, and RFP packages developed. 5.7: Performance evaluation plan for the load/generation balancing scheme developed and approved by the stakeholders.
Q3	5.8: MGCS vendor evaluated and selected.
Q4	3.7: Distribution and generation automation schemes implementation complete. 3.8: Load/generation balancing scheme via feeder reconfiguration developed.

Table 10. Quarterly Project Milestones: Budget Period 5

Period	Items and Description
Q1	1.13: Revise PMP, CSP submitted. 1.14: BP4 continuation briefing held. 2.7: Fiber installation complete for the MGCS. 3.9: Adaptive protection strategy developed for the different microgrid operating modes.
Q2	3.10: Deployment and integration testing of the distribution and generation automation scheme. 4.6: BESS integration testing complete. 5.9: Deployment and EPC of the microgrid and its MGCS completed.
Q3	5.10: Testing of integration of the MGCS, BESS, FLISR, and SCADA. 5.11: Microgrid and MGCS commissioned and online.
Q4	5.12: Load/generation balancing scheme evaluated to document the scheme's performance and compare against the baseline. 6.1: Final project briefing presenting the results and accomplishments of the project. 7.4: Expansion of the scholarship program to include more STEM fields.

3.6 Go/No-Go Decision Points

- **Budget Period 1 Go/No-Go Decision Points:**
  - BP1-GNG1: All system upgrades completed (Milestone 2.5)
  - BP1-GNG2: FLISR scheme developed (Milestone 3.1)
  - BP1-GNG3: BESS high-level design completed (Milestone 4.1)
  - BP1-GNG4: CBA developed and signed (Milestone 7.2)
- **Budget Period 2 Go/No-Go Decision Points:**
  - BP2-GNG5: FLISR scheme commissioned and online (Milestone 3.5)
  - BP2-GNG6: BESS system vendor evaluated and selected (Milestone 4.3)
  - BP2-GNG7: Integration plan developed (Milestone 5.2)
- **Budget Period 3 Go/No-Go Decision Points:**
  - BP3-GNG8: BESS plant commissioned online (Milestone 4.5)

- **Budget Period 4 Go/No-Go Decision Points:**
  - BP4-GNG9: MGCS vendor evaluated and selected (Milestone 5.8)
  - BP4-GNG10: Distribution and generation automation schemes implementation complete (Milestone 3.7)
- **Budget Period 5 Go/No-Go Decision Points:**
  - BP5-GNG11: Testing of integration of the MGCS, BESS, FLISR, and SCADA (Milestone 5.10)
  - BP5-GNG11: Microgrid and MGCS commissioned and online (Milestone 5.11)
  - BP5-GNG11: Expansion of the scholarship program to include more STEM fields (Milestone 7.5)

3.7 End of Project Goals

The following end-of-project goals are envisioned:

- **EOP1:** Upgrading the existing communication, interconnection, and reclosing infrastructure to support distribution automation schemes, BESS connections, and MG installations.
- **EOP2:** Deploying the FLISR scheme on the selected feeders (b) (4) [redacted] of the (b) (4) [redacted] to minimize the number of customers impacted by faults on the feeder by locating and isolating the fault while providing alternate energization paths for the customers out of the fault zone.
- **EOP3:** Implementing load and generation balancing using automatic load transfer schemes with BESS supporting interim imbalances to maximize renewable hydroelectric generation use.
- **EOP4:** Providing a means of keeping the critical loads online using the BESS and coordinating a reconnection of the hydro generation in case of outages.
- **EOP5:** Providing a means of gaining experience on smart grid technologies, battery energy storage, and microgrids for KU, its generation partner WPPI Energy, and the extended community in general.

3.8 Project Schedule

Figure 4 provides information on the project's schedule.

3.9 Project Management

3.9.1 Progress Reporting and Communication Plan

In addition to the Pre-Continuation Briefing 90 days before the start of each budget period, biweekly internal pulse meetings for each task as it starts, monthly project management meetings for the overall project, and stakeholder review meetings with the KU management will be scheduled. The purpose of these meetings is to keep track of the project's progress against the project's planned schedule.

SOPO	Task	Duration (months)
1	**Project Management**	60
1.1	Project Management Plan	15
1.2	NEPA Compliance	3
1.3	Cybersecurity Plan (CSP)	15
1.4	Project Meetings and Continuation Briefing	60
1.5	EPC Plan	3
1.6	Kickoff	3
2	**System Upgrades**	21
2.1	System upgrade and integration plan	6
2.2	Procurement of Smart Reclosers and Communication Infrastructure	12
2.3	Standardization and Settings	9
2.4	Fiber Communication Upgrades	12
2.5	Installation of 12 kV interconnection feeder	6
3	**Distribution and Generation Automation**	39
3.1	FLISR Scheme Design & Reliability Studies	24
3.2	Load/Generation Balancing and Feeder Reconfiguration Scheme	6
3.3	Adaptive Protection Studies and Philosophy	18
3.4	Deployment and Integration	18
3.5	FLISR Testing and Commissioning	9
4	**BESS**	42
4.1	System Design	6
4.2	BESS Specifications	12
4.3	System Procurement	12
4.4	BESS Deployment & Integration	18
4.5	Commissioning of BESS plant	9
5	**Hybrid Microgrid**	39
5.1	Microgrid Design	6
5.2	Stability Studies and Specification	9
5.3	MGCS Procurement and Installation	9
5.4	Integration of MGCS into BESS, FLISR and SCADA	51
5.5	Testing and Commissioning of MGCS	9
5.6	Training & Performance Evaluation during Load/Generation Balancing and Outage	18
6	**Review and Close**	6
7	**Community Benefits Plan**	60
7.1	C&LE initiatives	36
7.2	Workforce initiatives	21
7.3	DEIA Initiatives	60
7.4	J40 Initiatives	60

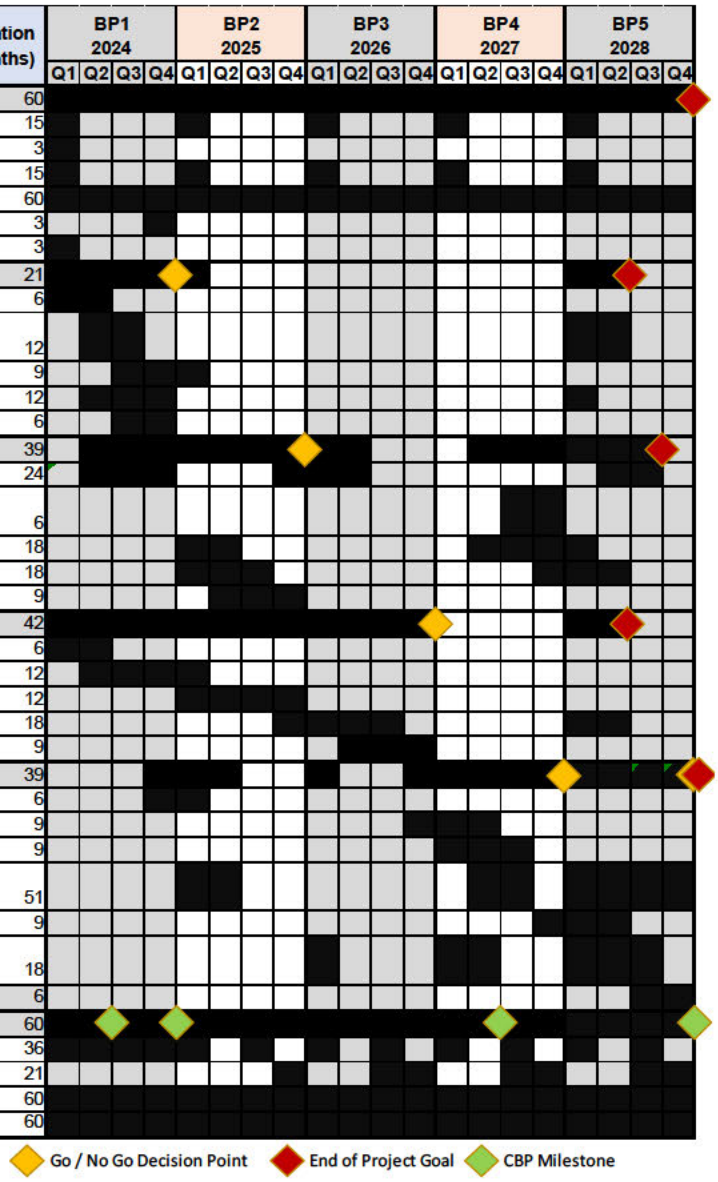

Figure 4 Project Schedule

3.9.2 Project Control

KU can track labor and other expenses incurred on their projects on a bi-weekly basis. They can also compare planned expenditures against actual expenditures and identify burn rates that are faster or slower than planned. An intelligent spreadsheet tool is used to perform the requisite project tracking and controlling for simple projects. For more complex projects, a detailed project plan with work breakdown structures, resource assignments, dependencies, and linkages will be constructed in a commercial tool like Microsoft Project or its equivalent. In both cases, the project manager can track the planned value, earned value, and actual cost. Earned value is typically calculated using the 0/100 rule when task granularity makes this a feasible approach.

The project tracking system provides an overview of all active projects and automatically flags projects for review if:

- Planned finish dates expire without a corresponding change in status indicating the work is complete.
- Labor and/or expense burn rates are faster than planned rates, plus a safety factor.
- There are billing issues.
- The project manager has requested project escalation and management assistance.

Once a month, an internal project review meeting is conducted during which the management staff at KU reviews all projects that have been flagged. The project manager presents their project update and explains the reasons for the flag and what is being done to address the issue(s). Where applicable, a separate project deep dive is conducted to analyze the issues in detail, and, if necessary, a weekly pulse meeting may be initiated for management to review progress in addressing the issues.

Lastly, KU's senior management team meets monthly to review a list of all open projects to discuss progress and identify and discuss any quality problems.

3.9.3 Risk Management

As the project manager identifies risks, they are either addressed immediately (if possible) or brought to the leadership team's attention, and the utility's project management dashboard is updated. These risks are then addressed in consideration of the following:

- Current status (open/closed)
- Impact (high/medium/low)
- Probability of occurrence (high/medium/low)
- Risk description
- Project impact details
- Risk area (for example, budget, schedule, resources, etc.)
- Risk response strategy (acceptance, avoidance, mitigation, etc.)
- Response strategy (actions to prevent issues from occurring)
- Contingency plan (actions to be taken should an issue occur)
- Triggers (what will trigger the execution of the contingency plan)

Strategies for mitigating the risks will depend on the nature of the issue:

- The project manager and the KU leadership team will handle scope issues not resolved by the technical team.
- Resourcing/scheduling issues will be addressed by identifying required skill sets and allocating the appropriate personnel, with available resources, to facilitate the project.

3.9.4 Risk Management

The quality of the work performed at KU is paramount and a key metric. Two types of quality assurance activities are performed during project execution:

- **Editorial content:** A team at KU, working with our consultant, is responsible for the grammatical content, formatting, and general appearance of project submittals or other publications regarding this endeavor.
- **Technical content:** KU's team, working with our consultant, conducts a review process to confirm the accuracy of the input data, the methodology employed, calculations/studies performed, results, and findings.

Both activities are initially project-focused, and improvements are only visible to the immediate team members and support staff, like the editorial review team. Dissemination of lessons learned to a broader audience occurs in two ways.

All technical teams meet regularly to discuss topics specific to their area. Part of that discussion involves challenges and lessons learned on ongoing projects. This ensures that lessons learned are shared on a close-to-real-time basis. In certain cases, that may also involve improvements to tools, methodologies, and processes made on an ad-hoc basis as necessary.

KU works with our consultant to compose a formal Project Closure Report as a final step when projects are completed. This information is collated by the KU team working with our consultant. A summary of the project, including knowledge gained and potential future applications, is created and included in the project work order file. This is made available for all staff going forward at KU.

4 Technical Qualifications and Resources

The following table provides technical qualifications for our team members and associated resources.

Table 11. Technical Qualifications and Resources

Company	Expertise	Equipment and Tools
Kaukauna Utilities	KU has a proven history of being a forerunner in implementing infrastructure and technology advances to build a more resilient and reliable grid. KU has adequate access to equipment and facilities to accomplish this project. We also have longstanding relationships with local contractors and vendors. We own and operate seven hydroelectric generation facilities along the Fox River. This includes the newly constructed Badger Hydro Plant, completed in 2014. This $40 million project culminated in over 10 years of planning, studies, analysis, and obtaining various federal and state approvals, certifications and permits, and innovative financing through Clean Renewable Energy Bonds. The Badger Hydro Plant combined the hydraulic capacity of two previous plants into a new single two-unit plant resulting in more reliability, capacity, and resiliency than the previous two. KU has spearheaded other projects, including renovating office and operation facilities through the green building expansion program, earning the Leadership in Energy and Environmental Design (LEED) Gold Certification from the U.S. Green Building Council. KU also implemented one of the state's first outage management systems by a public power utility. The outage management system is integrated with SCADA, advanced metering infrastructure (AMI), geographic information system (GIS), customer information system (CIS), interactive voice response (IVR), and two-way text integration to increase response and restoration times due to outages. The KU project team recently completed a $6.7 million substation expansion and rebuilding project, the Combined Locks Substation. This project replaced 45-year-old equipment to increase system reliability and service. In addition, it was expanded to meet consumer needs and support future distributed energy resource requirements.	KU owns and maintains a fleet of various Electric Distribution equipment including Bucket trucks, Digger/derricks, Line tensioners, Fiber optic cable, Stringing equipment, etc. In addition, it also has access to local contractors providing services and equipment such as crane equipment and certified operators, trenching equipment, etc. KU is also currently working with a vendor to deploy its SCADA system that will help in providing telemetry to its system operators.
Team	**Expertise**	
Eric Miller, Manager of Engineering and Project Management (PROJECT MANAGER)	Eric is a University of Wisconsin–Platteville graduate with a Bachelor of Science in Electrical Engineering. He has over 25 years of experience in municipal utilities, specializing in distribution engineering and project management. Throughout his tenured career, Eric has led the implementation of infrastructure and technological advances aimed at improving the resilience of the electric distribution grid. These projects include implementing and converting to AMI, implementing GIS mapping, and constructing modern electrical distribution substations. He is also responsible for ensuring KU's designation of Diamond Level for the Reliable Public Power (RP3) program administered by the American Public Power Association (APPA). Eric's history includes holding positions in multiple trade associations, including the APPA's System Improvement Committee Chair. He has also been appointed to APPA's Demonstration of Energy and Efficiency Developments (DEED) board of directors.	

David Pahl, Engineering and Operations Director (PROJECT LEAD)	David is a graduate of the University of Wisconsin–Madison with a Bachelor of Science in Electric Engineering and a graduate of the University of Wisconsin–Oshkosh with a Master of Business Administration. He has over 15 years of experience in the utility industry, focusing on engineering, field service, project engineering, and consulting services. In his role, he ensures that KU's maintenance plans exceed the National Electrical Testing Association (NETA) recommendation and consistently increase system reliability. David also spearheaded the launch of KU's first outage management system integrated with SCADA, AMI, GIS, CIS, IVR, and two-way text integration to increase response and restoration times due to outages. He is a leader in implementing the utility network with ESRI and is a speaker at their national conferences. He also represents KU in the electrical vehicle planning group through WPPI Energy.
Kayla Coonen, Operational Technology Specialist (TECHNICAL LEAD)	Kayla is a University of Wisconsin–Eau Claire graduate with a Bachelor of Science in Environmental Geography and a graduate of Missouri State University with a Master of Geospatial Sciences in Geography, Geology, and Planning. She has six years of geospatial experience working with regulatory agencies across multiple industries. Her background includes knowledge of zoning, issuing of permits, conditional uses, variances, ordinance regulations, and interpreting land descriptions for GIS purposes. Kayla implemented new projects at KU, including the Automated Utility Design (AUD) work order system and upgrading our GIS and Outage Management System (OMS). She is also a front-runner in implementing the utility network with ESRI and is a speaker at their national conferences.
Michael Avanzi, General Manager	Michael holds a Master of Business Administration from Union University in Jackson, Tennessee, and a Bachelor of Science in Electrical Engineering from Christian Brothers University in Memphis. He also holds certification as a Professional Engineer in the state of Tennessee. He has over 18 years of experience with municipal utilities, leading engineering and operations activities for electric, gas, and water utilities. He is skilled in electric transmission and distribution, resource planning and acquisition, demand-side management, and distributed energy resources. His experience includes energy planning, innovation management, electrical construction, and maintenance at Colorado Springs Utilities and distribution system engineering for Memphis Light, Gas, and Water. Michael is engaged in the community through his involvement in the City of Kaukauna Plan Commission and Industrial Park Commission. He is also an engaged Heart of the Valley Chamber of Commerce Leadership Roundtable group member. Michael is on the Board of Directors for MEUW and WPPI.
Zachary Moureau, Environmental/ Compliance Manager	Zach is a University of Wisconsin–Green Bay graduate with a Bachelor of Environmental Science. He has over ten years of experience working with regulatory agencies, clients, and contractors across multiple industries. Zach is actively involved with several regional and national hydroelectric power organizations. His participation ensures that KU stays ahead of regulatory and industry changes.
Clara Pickett, Finance and Administration Director (ECONOMIC DEVELOPER/ ACCOUNTING)	Clara is a University of Wisconsin – Green Bay graduate with a Bachelor of Accounting and a Bachelor of Business Administration–Management. She is also a Certified Public Accountant. Clara has over 15 years of experience in financial auditing and accounting, specializing in governmental and utility operations. She has a proven track record of leading, planning, organizing, and directing projects aimed at process improvement for financial and utility operations. This includes implementing a new Enterprise Resource Planning (ERP) and CIS. She oversees a $50 million budget, a strategic 10-year capital improvement plan, and coordination of financing. Clara has also conducted numerous compliance audits related to State and Federal funding while keeping current on guidance and compliance requirements of the Single Audit Act. Clara is a member of WPPI's Finance and Audit Committee, the Rates Services Advisory Group, and is an alternate to the Board of Directors. She is also a member of the APPA Risk Management Working Group.

KU has access to adequate in-house resources along with longstanding relationships with local contractors and vendors to implement state-of-the-art projects. The following table provides a list of relevant works and innovative projects that were recently delivered by KU staff.

Table 12. Previous Work Efforts, Demonstrated Innovations, and Their Applications

Year	Project Description
2020	**Grid modernization:** KU also implemented one of the state's first outage management systems by a public power utility. The outage management system is integrated with SCADA, advanced metering infrastructure (AMI), geographic information system (GIS), customer information system (CIS), interactive voice response (IVR), and two-way text integration to increase response and restoration times due to outages.
2020	**Substation expansion:** The KU project team recently completed a $6.7 million substation expansion and rebuilding project, the Combined Locks Substation. This project replaced 45-year-old equipment to increase system reliability and service. In addition, it was expanded to meet consumer needs and support future distributed energy resource requirements. This demonstrates the capabilities, resources, and experience of KU with grid resiliency and reliability projects.
2014	**Badger Hydro Plant:** Specifically, the KU distribution network gets fed by seven hydroelectric generation facilities on the Fox River. The latest addition, the Badger Hydro Plant, was completed in 2014 at a cost of $40 million. It required over 10 years of planning, studies, analysis, and gaining various federal and state approvals, certifications, and permits. It also required financing through innovative Clean Renewable Energy Bonds.
2008	**State-of-the-art renovations:** KU has spearheaded further projects, including renovating office and operation facilities through the green building expansion program, earning the Leadership in Energy and Environmental Design (LEED) Gold Certification from the U.S. Green Building Council.

Statement of Project Objectives (SOPO)

Kaukauna Utilities Grid Resilience Project

A. Objectives

Project objectives are as follows: a) install a BESS that provides grid support in grid-connected mode, b) use the BESS to improve outage management and provide black-start capability for native renewable hydroelectric generation plants, and c) install and upgrade the communication and automation infrastructure to enable faster fault location, isolation, and service restoration augmented by the BESS.

B. Scope of Work

The high-level technical scopes of this project are summarized as follows:

1) Replacing and upgrading the existing manually operated tie and sectionalizing switches with smart reclosers that tie the [redacted] feeders.
2) Implementing a fault location, isolation, and service restoration (FLISR) scheme on the [redacted] feeders to ensure timely service restoration to the customers fed by the two substations in the event of a fault.
3) Install a 4 MW/4 MWh BESS on the [redacted] at the 12 kV side using the spare feeder location and extend it to the property across the street using an underground feeder.
4) Installing and commissioning a microgrid control system (MGCS) that allows load balancing, maintains load balancing using the BESS, allows islanding, and energizes critical loads in the [redacted] during outages.

C. Tasks to Be Performed

The tasks and subtasks of the project are summarized in this section[1]. A more detailed description of the tasks can be found in the technical volume (due to the 5-page limit).

1. **Project management:** This task includes all the project management aspects, including the documentation and reporting requirements.

1.1. **Project management plan (PMP):** Within 30 days of the award, the Recipient shall submit a Project Management Plan (PMP) to the designated Federal Project Officer (FPO). The Recipient shall not proceed beyond Task 1.0 until the FPO has accepted the PMP.

1.2. **NEPA compliance:** This task includes working with DOE to ascertain the project's required NEPA compliance documents, preparation, and submission.

1.3. **Cybersecurity plan (CSP):** The CSP shall be revised and resubmitted as often as necessary during the project to capture any major/significant changes.

1.4. **Continuation briefing(s):** The Recipient will brief DOE roughly annually to explain the technical effort's plans, progress, and results. The briefing shall also describe performance relative to project success criteria, milestones, and the Go/No-Go Decision point documented in the Project Management Plan (PMP).

1.5. **EPC plan:** Develop a plan and schedule for the project's EPC.

1.6. **Kickoff and progress meetings:** the task includes coordination between stakeholders.

2. **System upgrades:** Involves the system upgrades that KU will perform on their system.

[1] level 1 list (e.g., 1.) references the task and that the level 2 list (e.g., 1.1) references subtasks.

2.1. **Systems upgrade and integration plan:** Involves developing the plan and specifications to upgrade the reclosers and communications, includes the RFP packages.
2.2. **Procurement of smart reclosers and communication infrastructure** includes publication of RFPs, bid evaluation, and vendor selection processes.
2.3. **Standards and settings development:** Revise existing and develop new standards for the new technologies installed.
2.4. **Fiber communication upgrades:** Deploy fiber communication upgrades.
2.5. **12 kV interconnection feeder:** BAS spare feeder extension to the BESS site.
3. **Distribution and generation automation:** Develop and deploy DA schemes.
3.1. **FLISR scheme design and reliability studies:** FLISR scheme design and related studies.
3.2. **Load/generation balancing and feeder reconfiguration scheme:** Load generation balancing scheme design and related studies.
3.3. **Adaptive protection studies and philosophy:** Adaptive protection philosophy development and related studies.
3.4. **Deployment and integration:** Deployment and integration testing of DA schemes.
3.5. **FLISR testing and commissioning:** HIL testing and commissioning of FLISR schemes.
4. **BESS:** Design, development, procurement, deployment, and commissioning of the BESS.
4.1. **BESS design:** Includes the 30% design of the BESS system.
4.2. **BESS specifications:** Specifications development for the BESS, including the RFP package.
4.3. **BESS procurement:** RFP publication, vendor response evaluation, and vendor selection.
4.4. **BESS deployment:** 100% design and EPC of the BESS.
4.5. **Commissioning of BESS plant:** Includes final integration, site acceptance testing (SAT), commissioning, and the go-live of the BESS plant.
5. **Hybrid microgrid (MG):** Design, development, procurement, deployment, and commissioning of the MG.
5.1. **MG design:** Includes the 30% design of the MG and its MGCS.
5.2. **MG stability studies and specifications:** specifications development for the MG and related studies.
5.3. **MGCS procurement and installation:** RFP publication, vendor response evaluation, and vendor selection. It also includes 100% design and EPC of the MG.
5.4. **Integration of MGCS into BESS, FLISR, and SCADA:** Studies, coordination, and testing of MGCS integration with the BESS, FLISR, and KU SCADA.
5.5. **Testing and commissioning of MGCS:** HIL testing and commissioning of the MGCS.
5.6. **Training and performance evaluation during load/generation balancing and outage:** includes training the KU employees to operate and maintain the BESS. It also includes monitoring and performance evaluation schemes during outages.
6. **Review and close:** includes all closing tasks and the final project briefing to the DOE.
7. **Community Benefits Plan:** The CBP includes the following subtasks.
7.1. **Community and labor engagement (C&LE):** includes developing and signing CBA.
7.2. **Workforce initiatives:** include reallocating a full-time position at KU to support the new technologies, hiring interns, and encouraging local contracting companies to participate in the project development.

7.3. **Diversity, equity, inclusion, and accessibility (DEIA)**: includes encouraging the MWBEs to participate in the project development.

7.4. **Justice40 initiatives** includes encouraging the DBEs to participate in the project development and extending the KU-sponsored scholarships to include additional STEM fields (such as battery storage and MGs).

D. Deliverables

- Subtask 1.1: Project management plan[2].
- Subtask 1.2: NEPA compliance document as required[2].
- Subtask 1.3: Cybersecurity plan[2].
- Subtask 1.4: Pre-continuation briefing document(s)[2].
- Subtask 1.5: The EPC plan document.
- Subtask 1.6: Meeting notes from the kickoff, progress meetings, and continuation briefings[2].
- Subtask 2.1: System upgrade plan, upgrade equipment specifications document, RFP package.
- Subtask 2.2: Solicitation of upgrade equipment and communication infrastructure and contract.
- Subtask 2.3: Standards for installation, integration, and operation of (a) smart reclosers, (b) MGCS, (c) BESS site controller, (d) distribution automation schemes, including FLISR.
- Subtask 2.4: Commissioning report of the communication infrastructure.
- Subtask 2.5: Final report of executed work on 12 kV interconnection feeder.
- Subtask 3.1: Documented FLISR scheme and report on the reliability studies.
- Subtask 3.2: Load/gen balancing, feeder reconfiguration scheme, and studies report.
- Subtask 3.3: Report on the studies of adaptive protection and philosophy.
- Subtask 3.4: Overall FLISR and DA design document, device settings, and integration reports.
- Subtask 3.5: Test plan for FAT and SAT, model of KU system, implementing the FAT and SAT, and the commissioning report.
- Subtask 4.1: BESS system design documenting the 30% of the design of the BESS system.
- Subtask 4.2: Specs document for all equipment in the BESS system, RFP package for BESS.
- Subtask 4.3: Solicitation of the BESS system EPC and contract.
- Subtask 4.4: 100% BESS design of the BESS, test plan for FAT and SAT, proposal deliverables.
- Subtask 4.5: FAT report, SAT report, commissioning report.
- Subtask 5.1: MG 30% design document, functional requirements of the MG modes.
- Subtask 5.2: Report on the MG system stability study and specs document for the MG & MGCS.
- Subtask 5.3: MG RFP package and solicitation of the MG EPC and contract.
- Subtask 5.4: Integration test plan and integration test report.
- Subtask 5.5: Test plan for FAT and SAT, KU system model, FAT, SAT, and commissioning report.
- Subtask 5.6: Performance evaluation plan and reports.
- Task 6.0: Final report to close the project in addition to the final project briefing[2].
- Subtask 7.1: CBA document, two community workshops per year, and other deliverables of the CBA, semiannual community communication campaigns disseminating project progress.
- Subtask 7.2: Re-allocation of a recently hired full-time position and 2 internships at KU to support this project. Also, extending scholarships to include trades aligned with BESS and MGs.

[2] These are DOE deliverables that will be submitted to DOE as part of reporting for this project.

- Subtask 7.3: Communication campaigns targeting DACs, MWBEs, and DBEs for RFPs.
- Subtask 7.4: SAIDI reporting (as part of Subtask 5.6) for DAC areas, targeted recruitment campaigns to hire from DACs.

In addition to the deliverables listed above, the Recipient shall submit all periodic, topical, final, and other reports in accordance with the Federal Assistance Reporting Checklist and accompanying instructions.

E. Briefings/Technical Presentations

The Recipient shall prepare, and present periodic briefings, technical presentations, and demonstrations as requested by the Federal Project Officer, which may be held at a DOE or the Recipient's facility, other mutually agreeable location, or via webinar. Such meetings may include all or a combination of the following:

Kickoff briefing: Not more than 30 days after submission of the Project Management Plan, the Recipient shall prepare and present a project summary briefing as part of a Project Kickoff Meeting.

Pre-continuation briefing: Not less than 90 days before the planned start of a budget period, the Recipient shall brief the DOE on the results to date and their plans for the subsequent work periods. The DOE will consider the information from this briefing, as well as the content of deliverables submitted to date, prior to authorizing continuing the project.

Final project briefing: Not less than 30 days prior to the end of the project, the Recipient will prepare and present a Final Briefing on the results and accomplishments of the entire project.

Other briefings: The Recipient shall prepare and present technical, financial, and/or administrative briefings as requested by the DOE. Additionally, the DOE may require Recipients to make technical presentations at national and/or industry conferences.

F. Milestone Table

Qtr	Items and Description
	Budget Period 1 (2024)
Q1	1.1: PMP submitted to the FPO within the first 30 days of the grant award. 1.2: Submission of the NEPA compliance documents. 1.3: First cybersecurity plan for the project to be developed and submitted along with the PMP. 1.4: Project continuation briefing reports submitted. 1.5: Kickoff meeting to be held among the project stakeholders, with PMP, NEPA, and CSP provided
Q2	2.1: System upgrade plan finalized, and system upgrade RFPs published. 4.1: BESS system 30% design complete. 7.1: Community engagement workshop held, repeated every six months till the end of the project.
Q3	2.2: System upgrade vendor(s) evaluated and selected.
Q4	1.6: An EPC plan developed in the quarter after the design phase of the distribution and generation automation work, the BESS plant, and the hybrid MG is completed and approved by the stakeholders. 2.3: The 12 kV feeder off [redacted] for the BESS interconnection is installed. 2.4: Fiber upgrade and installation completed. 2.5: All system upgrades completed to support the interconnection and deployment of the DA, BESS, and MG. 3.1: FLISR scheme developed for the selected feeders with performance evaluation. 7.2: Community Benefits Agreement developed and signed.
	Budget Period 2 (2025)
Q1	1.7: Revised PMP, CSP submitted.

Qtr	Items and Description
	1.8: BP1 continuation briefing held. 2.6: Standards on the installation and integration of smart reclosers, MGCS, BESS, generation controllers, and communications developed and approved by the stakeholders. 4.2: BESS system specifications complete and RFP. 5.1: Hybrid MG and its MGCS 30% design complete.
Q2	3.2: Adaptive protection philosophy developed for the various feeder configurations and load/gen scenarios. 5.2: Plan and specs developed for integrating the MGCS, BESS, FLISR, smart reclosers, and the KU SCADA.
Q3	3.3: FLISR scheme RTDS and HIL testing complete. 3.4: Integration testing of FLISR, BESS, and SCADA.
Q4	3.5: FLISR scheme commissioned and online. 4.3: BESS system vendor evaluated and selected.
Budget Period 3 (2026)	
Q1	1.9: Revised PMP, CSP submitted. 1.10: BP2 continuation briefing held. 5.3: Training strategy for FLISR and BESS developed.
Q2	3.6: Reliability studies done with FLISR.
Q3	4.4: Deployment and EPC of the BESS plant completed.
Q4	4.5: BESS plant commissioned and online.
Budget Period 4 (2027)	
Q1	1.11: Revise PMP, CSP submitted. 1.12: BP3 continuation briefing held.
Q2	5.4: Stability studies for the various MG operating modes and transitions completed. 7.3: Reallocation of Full-time position at KU to handle innovative technologies. 5.5: Personnel training complete for BESS operation and maintenance. 5.6: MGCS specifications developed, and RFP packages developed. 5.7: Performance evaluation plan for the load/generation balancing scheme developed and approved by the stakeholders.
Q3	5.8: MGCS vendor evaluated and selected.
Q4	3.7: Distribution and generation automation schemes implementation complete. 3.8: Load/generation balancing scheme via feeder reconfiguration developed.
Budget Period 5 (2028)	
Q1	1.13: Revise PMP, CSP submitted. 1.14: BP4 continuation briefing held. 2.7: Fiber installation complete for the MGCS. 3.9: Adaptive protection strategy developed for the different MG operating modes.
Q2	3.10: Deployment and integration testing of the distribution and generation automation scheme. 4.6: BESS integration testing complete 5.9: Deployment and EPC of the MG and its MGCS completed.
Q3	5.10: Testing of integration of the MGCS, BESS, FLISR, and SCADA. 5.11: MG and MGCS commissioned and online.
Q4	5.12: Load/gen balancing scheme evaluated and compared against the baseline. 6.1: Final project briefing presenting the results and accomplishments of the project. 7.4: Expansion of the scholarship program to include more STEM areas (e.g., battery storage and microgrids).

Location(s) of Work Documentation

DE-FOA-0002740

Control Number: 2475-_____

Prime Applicant/ Team Member	Address	City	State	Nine Digit Zip Code (ZIP+4)
(b) (4) [redacted]	[redacted]	Kaukauna	WI	54130
[redacted]	[redacted]	Kaukauna	WI	54130

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Revised: 12/3/2014
Reviewed: 12/3/2014
(Previous Editions Obsolete)

U.S. DEPARTMENT OF ENERGY

ENVIRONMENTAL QUESTIONNAIRE

I. INSTRUCTIONS

The proposer shall prepare this Environmental Questionnaire (EQ) as accurately and completely as possible. Supporting information can be provided as attachments. The proposer must identify the location of the project and specifically describe the activities that would occur at that location. The proposer must provide specific information and quantities, regarding air emissions, wastewater discharges, solid wastes, etc., to facilitate the necessary review. In addition, the proposer must submit with this EQ a FINAL copy of the project's statement of work (SOW) or statement of project objective (SOPO) that will be used in the contract/agreement between the proposer and the U.S Department of Energy (DOE).

II. QUESTIONNAIRE

A. PROJECT SUMMARY

1. Solicitation/Project Number: M9MMKLB6PDJ3 Proposer: Kaukauna Utilities
2. This Environmental Questionnaire pertains to a: ■ Recipient or Prime Contractor ☐ Sub-recipient or Subcontractor
3. Principal Investigator: Zach Moureau Telephone Number: 920-462-0238
4. Project Title: Electric City Microgrid Project
5. Expected Project Duration: January 2024 through December 2027
6. Location of Activities covered by **this** Environmental Questionnaire: (City/Township, County, State):
   City of Kaukauna, Outagamie County, Wisconsin
7. List the full scope of activities planned (only for the location that is the subject of this Environmental Questionnaire).

   KU is looking to increase the resiliency and reliability of its renewable hydroelectric generation-based grid through battery energy storage system (BESS) integration. This will allow distribution system automation with almost instantaneous isolation to multiple sections during faults reducing the number of customers impacted by an outage. Furthermore, these actions will be communicated instantaneously to the Outage Management System (OMS) of the System Operations Center (SOC) to dispatch resources to remedy the cause of the isolated outage. Therefore, crews responding to the isolated outage will investigate a significantly smaller area to locate the cause of the outage, resulting in an overall decreased outage duration and gained efficiency in operation (reducing cost). In addition, this project will enable upgrading KU's grid infrastructure from aspects such as expanding the existing fiber optic networks, enhancing feeder monitoring and observability, advanced reclosers adoption, ability to automatically reconfigure the grid for reducing customer downtime, and formation of microgrids.
8. List all other locations where work would be performed by the primary contractor of the project and subcontractor(s). Each of the following must have an individual Environmental Questionnaire.

Subcontractor or sub-recipient	Location of activities for this project
To Be Determined	(b) (4) [redacted] Kaukauna, WI 54130

9. Identify and select the checkbox with the predominant project work activities under Group A, B, or C

Group A

☐ Routine administrative, procurement, training, and personnel actions. Contract activities/awards for management support, financial assistance, and technical services in support of agency business, programs, projects, and goals. Literature searches and information gathering, material inventories, property surveys; data analysis, computer modeling, analytical reviews, technical summary, conceptual design, feasibility studies, document preparation, data dissemination, and paper studies. Technical assistance including financial planning, assistance, classroom training, public meetings, management training, survey participation, academic contribution, technical consultation, and stakeholders surveys. Workshop and conference planning, preparation, and implementation which may involve promoting energy efficiency, renewable energy, and energy conservation.

***STOP!** If all work activities related to this project can be classified and described within categories under Group A, proceed directly to Section III CERTIFICATION BY PROPOSER. No additional information is required.*
If project work activities are described in either Group(s) B or C; then continue filling out questionnaire.

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Group B

☐ Laboratory Scale Research, Bench Scale Research, Pilot Scale Research, Proof-of-Concept Scale Research, or Field Test Research. Work DOES NOT involve new building/facilities construction and site excavation/groundbreaking activities. This work typically involves routine operation of existing laboratories, commercial buildings/properties, offices and homes, project test facilities, factories/power plants, vehicles test stands and components, refueling facilities, utility systems, or other existing structures/facilities. Work will NOT involve major change in facilities missions and operations, land use planning, new/modified regulatory/operating permit requirements. Includes work specific to routine DOE Site operations and Lab research work activities, but NOT building construction and site preparation. DOE work typically involves laboratory facilities and lab equipment operations, buildings and grounds management activities; and buildings and facilities maintenance, repairs, reconfiguration, remodeling, equipment use and replacement.

Group C

■ Pilot Test Facilities Construction, Pilot Scale Research, Field Scale Demonstration, or Commercial Scale Application. Work typically involves facility construction, site preparation/excavation/groundbreaking, and/or demolition. This work would include construction, retrofit, replacement, and/or major modifications of laboratories, test facilities, energy system prototypes, and power generation infrastructure. Work may also involve construction and maintenance of utilities system right-of-ways, roads, vehicle test facilities, commercial buildings/properties, fuel refinery/mixing facilities, refueling facility, power plants, underground wells, and pipelines, and other types of energy research related facilities. This work may require new or modified regulatory permits, environmental sampling and monitoring requirements, master planning, public involvement, and environmental impact review. Includes work specific to DOE Site Operations and Lab operation activities involving building and facilities construction, replacement, decommissioning/demolition, site preparation, land use changes, or change in research facilities mission or operations.

B. PROPOSED PROJECT ALTERNATIVES

1. If applicable, list any project alternatives considered to achieve the project objectives.

If location issues arise during the permitting stage of this project, the alternate location has been selected as 215 Elm Street, Kaukauna, WI 54130. This location is directly north of the initial proposed location. This location would achieve similar project objectives but is located further from the existing utility infrastructure.

C. PROJECT LOCATION

1. Provide a brief description of the project location (physical location, surrounding area, adjacent structures).

The address for the proposed Project location is 300 Island Street, Kaukauna, WI 54130. This property currently houses the Kaukauna Utilities Warehouse which consists of a concrete masonry unit structure that stores utility equipment/materials located on the northwest portion of the property. In addition, there is storage building consisting of steel framing and siding located on the southeast portion of the property. The remainder of the property consists of an asphalt or concrete surface with storage for utility equipment. The Project structures would be stored adjacent to the tailrace of the Badger Hydroelectric Plant within the Lower Fox River. There is a residential property to the north of the Project and several properties owned by the City of Kaukauna to the south and west including a middle school and the Kaukauna Utilities Main Office Building. The Fox River is located to the east of the property.

2. **Attach** a project site location map of the project work area.

See Page 13 for Site Location Map

D. ENVIRONMENTAL IMPACTS

NEPA procedures require evaluations of possible effects (including land use, energy resource use, natural, historic and cultural resources, and pollutants) from proposed projects on the environment.

1. Land Use

a. Characterize present land use where the proposed project would be located.

☐ Urban	■ Industrial	■ Commercial	☐ Agricultural
☐ Suburban	☐ Rural	☐ Residential	☐ Research Facilities
☐ Forest	☐ University Campus	☐ Other: _____	

b. Identify the total size of the facility, structure, or system and what portion would be used for the proposed project.

The entire footprint of the facility would be approximately 91' by 82'. Each battery (4 total) would be housed inside steel containers approximately 40' by 8'. There would also be two inverters and transformers and associated switchgear.

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ENVIRONMENTAL QUESTIONNAIRE

c. Describe planned construction, installation, and/or demolition activities, i.e., roads, utilities system right-of-ways, parking lots, buildings, laboratories, storage tanks, fueling facilities, underground wells, pipelines, or other structures.

☐ No construction would be anticipated for this project.

Battery Storage unit, Inverters, and other equipment will be installed with the required footings and foundations per standard installation requirements.

d. Describe how land use would be affected by operational activities associated with the proposed project.

☐ No land areas would be affected.

The property currently consists of asphalt pavement that is utilized for storage of utility equipment. There would be no significant impacts to the land use from operational activities.

e. Describe any plans to reclaim areas that would be affected by the proposed project.

■ No land areas would be affected.

f. Would the proposed project affect any unique or unusual landforms (e.g., cliffs, waterfalls, etc.)?

■ No ☐ Yes (describe)

g. Would the proposed project be located in or near local, state, or federal parks; forests; monuments; scenic waterways; wilderness; recreation facilities; or tribal lands? ☐ No ■ Yes (describe)

The proposed project would be located near the 1000 Islands Conservancy Zone. This property is owned and maintained by the City of Kaukauna. There would be no impacts to the conservancy from construction or operation of the project.

2. Construction Activities and/or Operation

a. Identify project structure(s), power line(s), pipeline(s), utilities system(s), right-of-way(s) or road(s) that will be constructed and clearly mark them on a project site map or topographic map as appropriate. ☐ None

See Pages 13 and 14 for Project Site Maps.

b. Would the proposed project require the construction of waste pits or settling ponds?

■ No ☐ Yes (describe and identify location, and estimate surface area disturbed)

c. Would the proposed project affect any existing body of water? ■ No ☐ Yes (describe)

The proposed project is located adjacent to the Lower Fox River. With the implementation of appropriate erosion and sediment control BMPs during construction, no impacts to the Fox River are anticipated.

d. Would the proposed project impact a floodplain or wetland? ☐ No ■ Yes (describe)

The proposed project is located within the regulatory floodway (100-year floodplain) for the Lower Fox River; however, the Badger Hydroelectric Project (FERC license # P-2677) is located directly upriver of the proposed project location and controls river flows/elevation within this area. The hydroelectric facility has stop gates capable of being deployed to mitigate flooding issues to the proposed project structures. No wetlands will be impacted by the proposed project.

e. Would the proposed project potentially cause runoff/sedimentation/erosion? ■ No ☐ Yes (describe)

There is a potential for runoff during construction. In order to prevent sediment from reaching the Fox River, appropriate sediment and erosion control BMP's will be implemented during construction.

f. Would the proposed project include activities located on perma-frost, near fault zones, or involve fracturing, well drilling, geologic stimulation, sequestration, active seismic data collection, and/or deepwater operations?

■ No ☐ Yes (describe)

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g. Would the proposed project involve any of the following: nanotechnology; recombinant DNA or genetic engineering; facility decommissioning or disposition of equipment/materials; or management of radioactive wastes/materials?

■ No ☐ Yes (describe)

3. Biological Resources

a. Identify any State or Federally listed endangered or threatened plant or animal species potentially affected by the proposed project.

☐ None

The U.S. Fish and Wildlife Service IPaC MN-WI D-key review indicated that the project would have "no effect" on tricolored bats, whooping cranes, or monarch butterflies. The range-wide Northern Long Eared Bat (NLEB) D-key review indicated that the directional boring of utilities associated with the project "May affect-but is not likely to adversely affect" the NLEB. All state-listed species are covered under the WI No/Low-Impact Broad Incidental Take Permit.

b. Would any designated critical habitat be affected by the proposed project? ■ No ☐ Yes (describe)

The currently proposed location has been previously developed and consists of mainly asphalt pavement; therefore, there is no critical habitat in the project area.

c. Describe any impacts that construction would have on any other types of sensitive or unique habitats.

☐ No planned construction ☐ No habitats ■ None ☐ Impact (describe)

There are no other sensitive or unique habitats in the project area.

d. Would any foreign substances/materials be introduced into ground or surface waters, soil, or other earth/geologic resource because of project activities? How would these foreign substances/materials affect the water, soil, biota, and geologic resources? ☐ No ■ Yes (describe)

With the exception of concrete footings installed during construction, there would be no foreign substances introduced. Footings would be installed in areas that were previously disturbed and currently covered in asphalt pavement.

e. Would any migratory animal corridors be impacted or disrupted by the proposed project? ■ No ☐ Yes (describe)

No migratory animal corridors will be impacted by the proposed project.

4. Socioeconomic and Infrastructure Conditions

a. Would local socio-economic changes result from the proposed project? ☐ No ☐ Yes (describe)

1. Reduce all-in System Average Interruption Duration Index (SAIDI), extreme events included, in disadvantaged communities. 2. reduced in forecasted outage reduction to DACs 3. Potentially 2 new jobs are created in DACs directly related to project activities 4.Representation of DACs in project planning

b. Would the proposed project generate increased traffic use of roads through local neighborhoods, urban or rural areas?

■ No ☐ Yes (describe)

c. Would the proposed project require new transportation access (roads, rail, etc.)? Describe location, impacts, costs.

■ No ☐ Yes (describe)

d. Would the proposed project create a significant increase in local energy usage? ■ No ☐ Yes (describe)

KU is looking to increase the resiliency and reliability of its renewable hydroelectric generation-based grid through battery energy storage system (BESS) integration. This will allow distribution system automation with almost instantaneous isolation of multiple sections during faults, reducing the number of customers impacted by an outage. Furthermore, these actions will be communicated instantaneously to the Outage Management System (OMS) of the System Operations Center (SOC) to dispatch resources to remedy the cause of the isolated outage.

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5. Historical/Cultural Resources

a. Describe any historical, archaeological, or cultural sites in the vicinity of the proposed project; note any sites included on the National Register of Historic Places. ☐ None

The proposed project location does not contain any historical, archaeological, or cultural sites. There is an archaeological site noted northeast of the proposed project location. This site is identified on the Wisconsin Historical Society Inventory as State Site # OU-0076. Copper tools were found at this site in 1900; however, several surveys have been completed in the vicinity of this archaeological site (Project # 91-1292 in 1992 and Project # 13-0962 in 2015). Both surveys did not relocate any items of significance and noted that the area has been extensively disturbed. In addition, the Thilmany Pulp and Paper Mill Warehouse (State Property # 240023) was located to the northeast of the proposed project location. This historic property was demolished in 2020 due to the poor condition of the building and the property was not eligible for the National Register.

b. Would construction or operational activities planned under the proposed project disturb any historical, archaeological, or cultural sites? ☐ No planned construction ☐ No historic sites ☐ Yes (describe) ■ No Impact (discuss)

There are no historic sites within the immediate vicinity of the proposed project area and the area of construction has previously been disturbed.

c. Has the State Historic Preservation Office been contacted with regard to this project? ■ No ☐ Yes (describe)

d. Would the proposed project interfere with visual resources (e.g., eliminate scenic views) or alter the present landscape?
■ No ☐ Yes (describe)

The project would not interfere with visual resources. Once the project is completed the landscape will be similar in character to the existing condition.

e. Would the proposed project be located on or adjacent to tribal lands, lands considered to be sacred, or lands used for traditional purposes? Describe any known tribal sensitivities for the proposed project area.

There are no such lands within the vicinity of the proposed project location.

6. Atmospheric Conditions/Air Quality

a. Identify air quality conditions in the immediate vicinity of the proposed project with regard to attainment of National Ambient Air Quality Standards (NAAQS). This information is available under the Green Book Non-Attainment Areas for Criteria Pollutants located at http://www.epa.gov/air/oaqps/greenbk/astate.html

	Attainment	Non-Attainment
O_3 - 1 Hour	✓	
O_3 - 8 Hour	✓	
SO_x	✓	
PM - 2.5	✓	
PM - 10	✓	
CO	✓	
NO_2	✓	
Lead	✓	

b. Would proposed project require issuance of new or modified local, state, or federal air permits to perform project related work and activities? ■ No ☐ Yes (describe)

c. Would the proposed project be in compliance with local and state air quality requirements? ■ Yes
If not, please explain.

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d. Would the proposed project be classified as either a New Source or a major modification to an existing source?
☒ No ☐ Yes (describe)

e. What types of air emissions, including fugitive emissions, would be anticipated from the proposed project, and what would be the maximum annual rate of emissions for the project?

	Maximum per Year	Total for Project
☐ SO_x		
☐ NO_x		
☐ PM - 2.5		
☐ PM - 10		
☐ CO		
☐ CO_2		
☐ Lead		
☐ H_2S		
☐ Organic solvent vapors or other volatile organic compounds--List:		
☐ Hazardous air pollutants -- List:		
☐ Other -- List:		
☒ None		

f. Would any types of emission control or particulate collection devices be used?
☒ No ☐ Yes (describe, including collection efficiencies)

g. How would emissions be vented?

No emissions would be generated from the proposed project.

7. Hydrologic Conditions/Water Quality

a. What nearby water bodies may be affected by the proposed project? Provide distance(s) from the project site.

The Lower Fox River is located approximately 20' south of the proposed project limits. Erosion control methods would be deployed during construction activities to prevent impacts to the Lower Fox River. There would be no impacts to the Lower Fox River from project operations.

b. What sources would supply potable and process water for the proposed project?

There are no potable or process water sources needed for the proposed project.

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c. Quantify the wastewater that would be generated by the proposed project.

		Gallons/day	Gallons/year
☐	Non-contact cooling water		
☐	Process water		
☐	Sanitary		
☐	Other -- describe:		
✓	None		

d. What would be the major components of each type of wastewater (e.g., coal fines)? ■ No wastewater produced

e. Identify the local treatment facility that would receive wastewater from the proposed project.
■ No discharges to local treatment facility

f. Describe how wastewater would be collected and treated. ■ No wastewater produced

g. Would any run-off or leachates be produced from storage piles or waste disposal sites? ■ No ☐ Yes (describe source)

h. Would project require issuance of new or modified water permits to perform project work or site development activities?
■ No ☐ Yes (describe)

i. Where would wastewater effluents from the proposed project be discharged? ■ No wastewater produced

j. Would the proposed project be permitted to discharge effluents into an existing body of water?
■ No ☐ Yes (describe water use and effluent impact)

k. Would a new or modified National Pollutant Discharge Elimination System (NPDES) permit be required?
■ No ☐ Yes (describe)

l. Would the proposed project adversely affect the quality or movement of groundwater? ■ No ☐ Yes (describe)

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m. Would the proposed project require issuance of an Underground Injection Control (UIC) permit?

☒ No ☐ Yes (describe)

n. Would the proposed project be located in or near a wellhead protection area, drinking water protection area, or above a sole source aquifer or underground source of drinking water (USDW)?

☐ No ☒ Yes (describe)

The proposed project is located approximately 800' southwest of Kaukauna Utilities groundwater supply well #4; however, the proposed project operations and infrastructure complies with the wellhead protection plan and there would be no impacts to the groundwater used for drinking water purposes.

8. Solid and Hazardous Wastes

a. Identify and estimate wastes that would be generated from the project. Solid wastes are defined as any solid, liquid, semi-solid, or contained gaseous material that is discarded, has served its intended purpose, or is a manufacturing or mining by-product (See EPA Municipal Solid Waste and Municipal Solid Waste by State).

	Annual Quantity
☐ **Municipal solid waste (e.g., paper, plastic, etc.)**	
☐ **Coal or coal by-products**	
☐ **Other -- Identify:**	
☐ **Hazardous waste – Identify:**	
☒ **None**	

b. Would project require issuance of new or modified solid waste and/or hazardous waste related permits to perform project work activities? ☐ No ☒ Yes (explain)

The proposed project location is located on a property with residual contamination. The current asphalt pavement and other ground surfaces act as a barrier to residual contamination that is present within the soil. Current residual contamination consists of polychlorinated biphenyls (PCBs), metals (including lead), volatile organic compounds, and polycyclic aromatic hydrocarbons (PAHs) from historic scrap and junk yard operations at the property. Modification of this barrier would require consultation and approval from the Wisconsin Department of Natural Resources (WDNR) and the Environmental Protection Agency (EPA) because this property is identified as a closed RCRA brownfield site with continuing obligations to maintain the barrier. This consultation would be performed through a post-closure modification request with the WDNR and subsequent consultation with the EPA.

c. How and where would solid waste disposal be accomplished?

☐ None generated

☐ On-site (identify and describe location)

☒ Off-site (identify location and describe facility and treatment)

Contaminated soils encountered during construction would be disposed at a licensed landfill facility based on the concentration of contaminants within the soils or treated at a licensed facility. At the end of life for the battery, the proper removal and recycling will be completed based on current standards of the date.

d. How would wastes for disposal be transported?

Contaminated soil removed during project construction would be disposed of by a certified material hauler in a covered container to prevent displacement of the material during transport. The main item for disposal from the proposed project operations would be the lithium-ion batteries identified as electronic waste. These batteries would be transported by a certified material hauler in an enclosed trailer.

e. Describe hazardous wastes that would be generated, treated, handled, or stored under this project. Hazardous waste information can be found at EPA Hazardous Waste website. ☐ None

Historical analysis of soil samples shows less than 10 ppm residual PCB contamination and 3 ppm residual lead contamination; therefore, soils with residual PCB and lead contamination would likely fall below the hazardous waste limits for each contaminant. All other residual contamination is well below regulatory standards for hazardous waste. All soils removed during construction would be placed on an impermeable barrier, soil samples collected and submitted for laboratory analysis, and the soil pile would be covered until results were provided. If results deemed the material was hazardous, it would disposed at a licensed treatment/disposal facility. All other soils would be disposed at a licensed landfill facility as daily cover material.

f. How would hazardous or toxic waste be collected and stored? ☐ None used or produced

Contaminated soils deemed hazardous waste would be stored on an impermeable surface or within a container and covered until proper transport was arranged for disposal.

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g. If hazardous wastes would require off-site disposal, have arrangements been made with a certified TSD (Treatment, Storage, and Disposal) facility?

☐ Not required ■ Arrangements not yet made ☐ Arrangements made with a certified TSD facility (identify)

If hazardous soils were removed during construction of the project facilities, disposal would be arranged at a certified treatment, storage, and disposal facility.

9. Health/Safety Factors

a. Identify hazardous or toxic materials that would be used in the proposed project.

■ None ☐ Hazardous or toxic materials that would be used (identify):

b. Describe the potential impacts of this project's hazardous materials on human health and the environment.

■ None

c. Would there be any special physical hazards or health risks associated with the project? ☐ No ■ Yes (describe)

There would be electrical shock hazards associated with the utility infrastructure but these hazards would be mitigated with access control and safety procedures for operating near the project facilities. These procedures would be similar to procedures already implemented for electrical safety at Kaukauna Utilities. In addition, there would be fire hazards associated with the lithium-ion battery. A fire suppression system would be installed within the battery storage facility to mitigate this hazard.

d. Does a worker safety program exist at the location of the proposed project? ☐ No ■ Yes (describe)

Kaukauna Utilities has an extensive health and safety program that covers all employee conduct and includes monthly safety training. In addition, any contractor awarded work associated with the proposed project would be required to submit a health and safety plan for approval.

e. Would additional safety training be necessary for any new laboratory, equipment, or processes involved with the project?

■ No ☐ Yes (describe)

f. Describe any increases in ambient noise levels to the public from construction and operational activities.

☐ None ■ Increase in ambient noise level (describe)

There would be minimal increase in ambient noise level from the construction of the proposed facilities. The duration of construction activities would be short-term, during normal daylight hours. There would be an increase in ambient noise levels from cooling fans on the battery storage containers. Property immediately surrounding the proposed project location consists of industrial land use owned by Kaukauna Utilities; therefore, there would be no impact to adjacent property owners.

g. Would project construction result in the removal of natural or other barriers that act as noise screens?

☐ No construction planned ■ No ☐ Yes (describe)

h. Would hearing protection be required for workers? ■ No ☐ Yes (describe)

10. Environmental Restoration and/or Waste Management

a. Would the proposed project include CERCLA removals or similar actions under RCRA or other authorities?

☐ No ■ Yes (describe)

There would be disturbance of the existing barrier over soils with residual PCB, PAH, VOC, and metals contamination during the construction of the proposed project. This would require EPA consultation related to the RCRA Brownfield at the proposed project location. All barriers would be restored upon completion of the construction activities and a revised barrier maintenance plan would be submitted, as necessary.

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b. Would the proposed project include siting, construction, and operation of temporary pilot-scale waste collection and treatment facilities or pilot-scale waste stabilization and containment facilities? ■ No ☐ Yes (describe)

c. Would the proposed project involve operations of environmental monitoring and control systems?
■ No ☐ Yes (describe)

d. Would the proposed project involve siting, construction, operation, or decommissioning of a facility for storing packaged hazardous waste for 90 days or less? ■ No ☐ Yes (describe)

E. REGULATORY COMPLIANCE

1. For the following laws, describe any existing permits, new or modified permits, manifests, responsible authorities or agencies, contacts, etc., that would be required for the proposed project

a. Resource Conservation and Recovery Act (RCRA): ☐ None ☐ New Required ■ Modification Required
Describe:

The WDNR's Remediation and Redevelopment Department and EPA's Region 5 PCB Coordinator would be consulted regarding the residual contamination at the closed RCRA Brownfield Site at the proposed project location. This would include a post closure modification request and restoration of the barrier installed over the residual contamination.

b. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA):
■ None ☐ New Required ☐ Modification Required
Describe:

c. Toxic Substance Control Act (TSCA): ■ None ☐ New Required ☐ Modification Required
Describe:

d. Clean Water Act (CWA): ☐ None ☐ New Required ■ Modification Required
Describe:

Although transformers using FR-3 transformer oil would be installed for this project, secondary containment structures or an oil spill contingency plan would be incorporated into the project scope of work because the FR-3 oil is still classified as an oil under the CWA. All proposed project facilities containing oil would be incorporated into Kaukauna Utilities Spill Prevention Control and Countermeasures plan.

e. Underground Storage Tank Control Program (UST): ■ None ☐ New Required ☐ Modification Required
Describe:

f. Underground Injection Control Program (UIC): ■ None ☐ New Required ☐ Modification Required
Describe:

g. Clean Air Act (CAA): ■ None ☐ New Required ☐ Modification Required
Describe:

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h. Endangered Species Act (ESA): ☐ None ☐ New Required ■ Modification Required
Describe:

Due to presence of the Northern Long Eared Bat in the project vicinity, directional boring of utility lines may-affect but would not likely adversely affect this endangered species. The U.S. Fish and Wildlife Service would be consulted in regards to this determination.

i. Floodplains and Wetlands Regulations: ☐ None ■ New Required ☐ Modification Required
Describe:

The proposed project area is located within the 100-year floodplain. Consultation with the Federal Emergency Management Agency, the Wisconsin Department of Natural Resources Floodplain Administrator, and Outagamie County Land Use & Zoning Department will be performed. It is not anticipated that this will be an issue for the project because water levels in the adjacent waterway section (Lower Fox River) are controlled by the upriver Badger Hydroelectric Project and the historical development of the property would mitigate flood risks. If issues do arise, project structures would be raised to comply with floodplain ordinances.

j. Fish and Wildlife Coordination Act (FWCA): ■ None ☐ New Required ☐ Modification Required
Describe:

k. National Historic Preservation Act (NHPA): ■ None ☐ New Required ☐ Modification Required
Describe:

l. Coastal Zone Management Act (CZMA): ■ None ☐ New Required ☐ Modification Required
Describe:

2. Identify any other environmental laws and regulations (Federal, state, and local) for which compliance would be necessary for this project, and describe the permits, manifests, and contacts that would be required.

If the total proposed project cost exceeds the Public Service Commission of Wisconsin's (PSCW) filing threshold, a construction authorization would be requested from the PSCW. This would include an application detailing the project along with an environmental impact component.

F. DESCRIBE ANY ISSUES THAT WOULD GENERATE PUBLIC CONTROVERSY REGARDING THE PROPOSED PROJECT. ■ None

G. WOULD THE PROPOSED PROJECT PRODUCE ADDITIONAL DEVELOPMENT, OR ARE OTHER MAJOR DEVELOPMENTS PLANNED OR UNDERWAY, IN THE PROJECT AREA?

■ No ☐ Yes (describe)

H. SUMMARIZE THE SIGNIFICANT IMPACTS THAT WOULD RESULT FROM THE PROPOSED PROJECT.

☐ None (provide supporting detail) ■ Significant impacts (describe)

Implementing distribution automation (DA) for fault clearing and service restoration to customers following faults on distribution feeders using automated feeder reconfiguration and reclosing schemes.
Grid support and outage management by adding a microgrid-forming BESS to stabilize the grid and providing black-start capability for hydroelectric plants to create a locally 100% renewable generation-based microgrid.
Load and generation balancing through BESS support and automated load transfer schemes.

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I. PROVIDE A DESCRIPTION OF HOW THE PROJECT WOULD BE DECOMMISSIONED, INCLUDING THE DISPOSITION OF EQUIPMENT AND MATERIALS.

The battery storage (BESS) has an estimated fifteen year life. The disposal or decommission a

III. CERTIFICATION BY PROPOSER

I hereby certify that the information provided herein is current, accurate, and complete as of the date shown immediately below.

Signature: _____ Date (mm/dd/yyyy): 05/17/2023

Typed Name: Zach Moureau

Title: Environmental & Compliance Manager

Organization: Kaukauna Utilities

IV. REVIEW AND APPROVAL BY DOE

I hereby certify that I have reviewed the information provided in this questionnaire, have determined that all questions have been appropriately answered, and judge the responses to be consistent with the efforts proposed.

DOE Project Manager

Signature: _____ Date (mm/dd/yyyy): _____

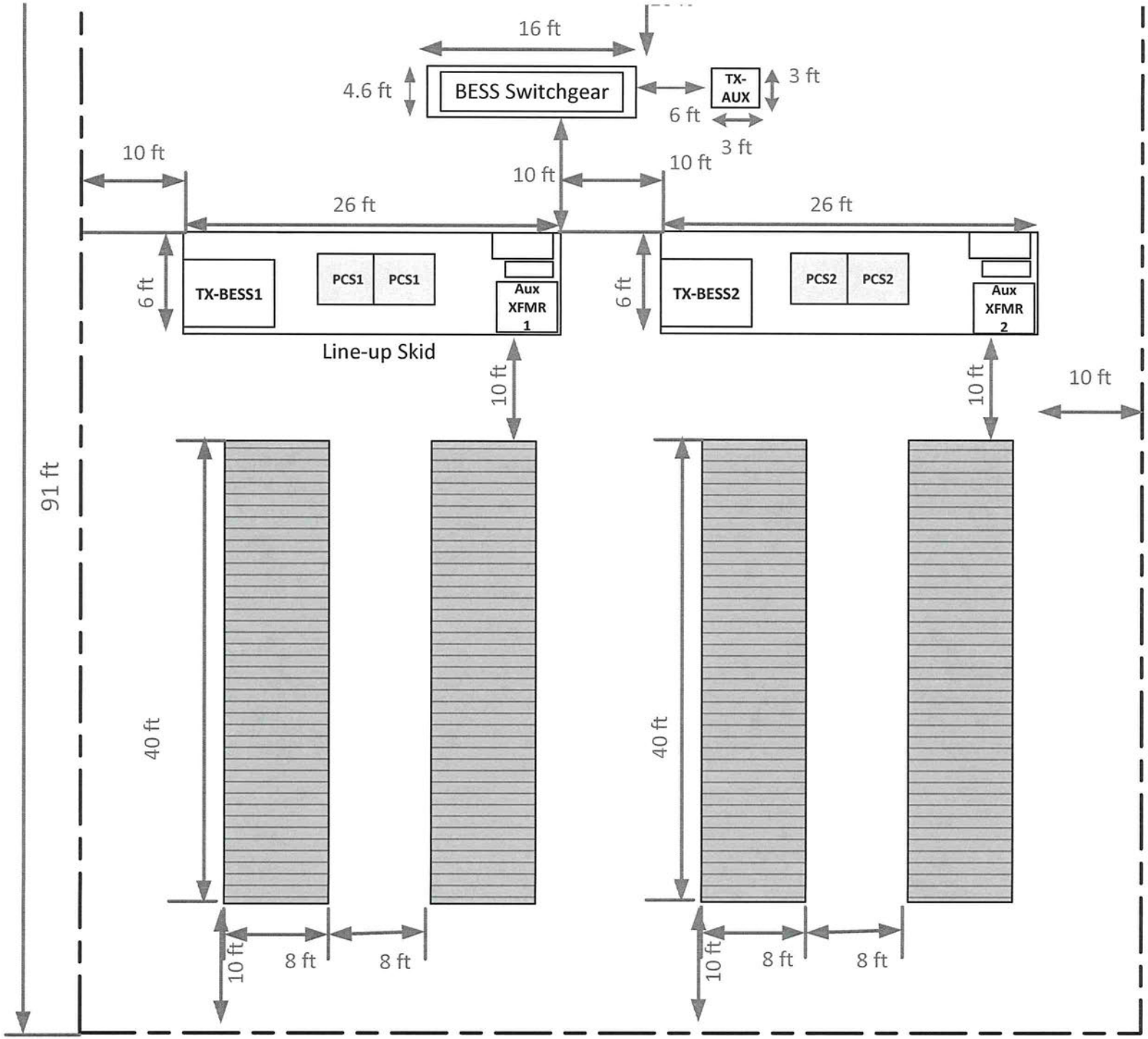
Typed Name: _____

Kaukauna Utilities

GRIP Area 3 – Electric City Microgrid Project
Site Map for Battery Storage
(b) (4) [redacted]
Kaukauna, WI 54130

Environmental Questionnaire Attachment

[redacted]


16 ft
4.6 ft
BESS Switchgear
TX-AUX
3 ft
6 ft
3 ft
10 ft
10 ft
10 ft
26 ft
26 ft
6 ft
TX-BESS1
PCS1
PCS1
Aux XFMR 1
6 ft
TX-BESS2
PCS2
PCS2
Aux XFMR 2
Line-up Skid
10 ft
10 ft
10 ft
91 ft
40 ft
40 ft
10 ft
8 ft
8 ft
10 ft
8 ft
8 ft

KAUKAUNA UTILITIES GRID RESILIENCE PROJECT
ERIC MILLER (KAUKAUNA UTILITIES / KU)

DE-FOA-2470

KEY PERSONNEL

Eric Miller – Project Manager, David Pahl – Project Lead

TECHNICAL SUMMARY AND PROJECT OBJECTIVES

The primary goal of this project is to increase the reliability and resiliency of an area in the KU distribution system that serves several critical facilities as well as three hydroelectric power plants. The improvement is achieved by the following use cases supported via deploying smart reclosers, a grid forming battery energy storage system (BESS) and associated control schemes:

- Implementing distribution automation (DA) schemes for a distributed fault location, isolation, and service restoration (FLISR).
- Outage management and grid stability enhancement by adding a BESS to black-start the hydroelectric plants and form a 100% clean microgrid .

The secondary goal is to gain experience deploying BESS and implementing feeder automation to unlock other use cases such as reverse power flow management, renewable energy firming, and energy arbitrage. These actions will be communicated to the Outage Management System (OMS) to enable dispatching crews to a defined area for cause mitigation (reducing outage duration). This project will also enable upgrading KU's grid infrastructure by expanding the existing fiber optic networks for enhanced feeder monitoring and observability, advanced reclosers adoption, automatic circuit reconfiguring, and microgrid formation.

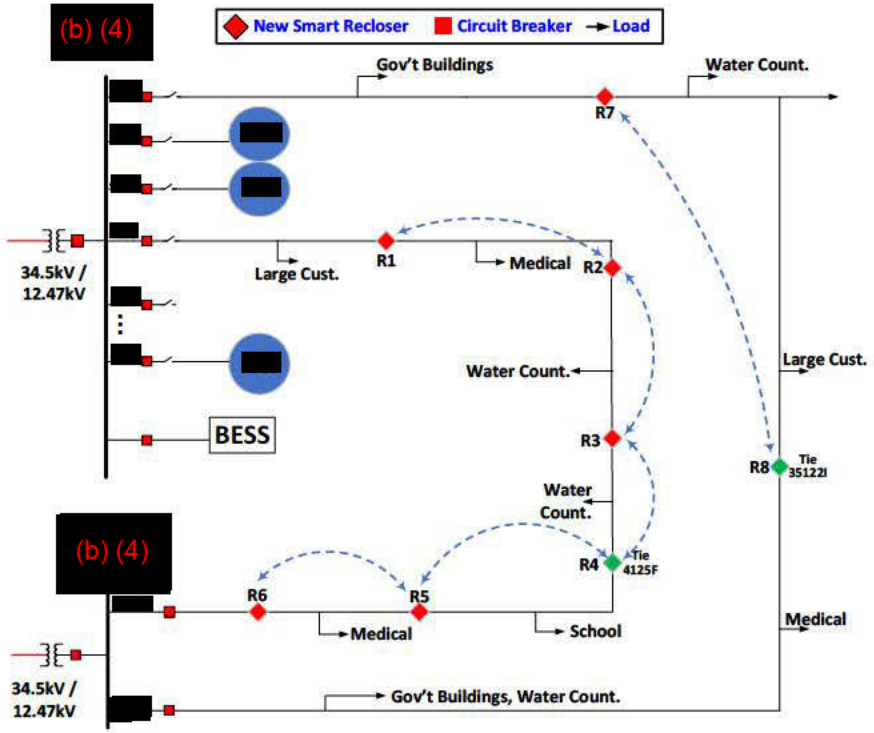
DOE IMPACT

This DOE funding will assist KU with maintaining low-cost rates and reliable service to KU customers and accelerate necessary infrastructure improvements. The utility's budget for implementing the proposed grid modernization and reliability enhancement is slated to extend beyond its 10-year budget. It will also help reduce the financial burden on the ratepayers to achieve grid modernization objectives while allowing KU to accelerate necessary system improvements and gain the knowledge and expertise to deploy advanced technologies.

PROGRAM SUMMARY

- Period of Performance: 60 months
- KU Cost Share: 50.88%
- Cost Share Funds: $3,120,031
- Federal Funds: $3,012,462
- Total Budget: $6,132,493

ADVANCED DISTRIBUTION AUTOMATION



KAUKAUNA UTILITIES

U.S. DEPARTMENT OF ENERGY

KAUKAUNA UTILITIES GRID RESILIENCE PROJECT
ERIC MILLER (KAUKAUNA UTILITIES/KU)

Project Objectives and Technical Impact

- Objectives:
  - Install a grid forming BESS at a major substation that serves three hydro plants, 6,000 customers and several critical facilities (water/wastewater treatment, control center, etc.) to provide grid support and stability in grid-connected mode and islanding (off-grid operation) upon outage.
  - Use the installed BESS for improved outage management and for providing black-start capability for hydroelectric plant energization, replacing the need for gas-fired power to black-start the units.
  - Install the communication and automation infrastructure on the selected areas of the KU network to unlock faster load restoration using distribution and generation automation schemes (including FLISR) augmented by the BESS.
- Technical Impact:
  - Improved system reliability (by about 20%)
  - Improved contingency response and fault impact on customers
  - Reduced downtime experienced by generation on the system
  - Eliminate use of a gas-fired plant for black starting hydro plant
- Community Impact:
  - Maintain low-cost rates and reliable service to KU customers
  - Enhanced KU and community experience with advanced technologies
  - Training opportunities for high quality jobs

BESS LOCATION

(b) (4)

[redacted]

Technology	Size / Quantity	Benefit
Grid Forming BESS	4MW/4MWH	Maximize the use of Hydro Power; eliminate GHG from gas-fired plants for black start
Smart Reclosers	7 (pole top) + 1 pad mount	Reduce outage recovery time below 5 minutes
Automation and Microgrid	Serving 6,000 customers (14 MW load)	Economic growth, Hiring, Developing new skills

KAUKAUNA UTILITIES

U.S. DEPARTMENT OF ENERGY

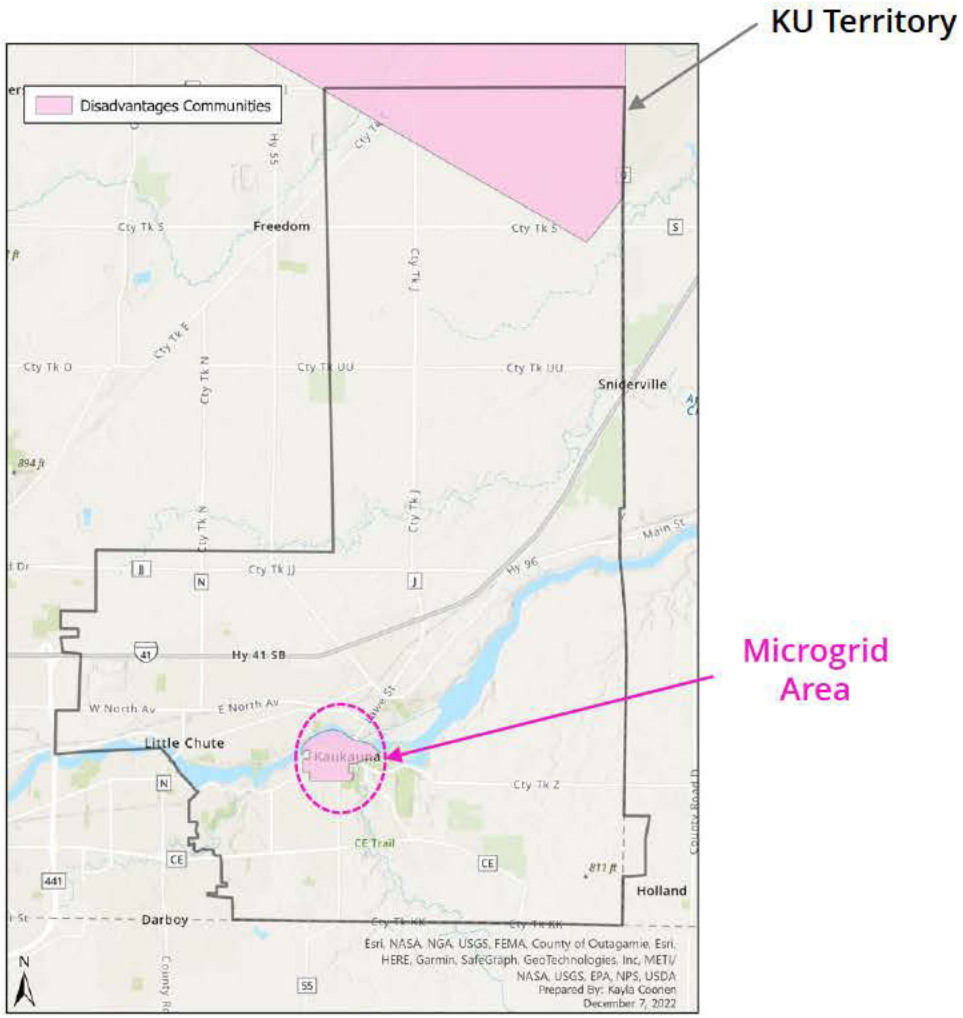
KAUKAUNA UTILITIES GRID RESILIENCE PROJECT
ERIC MILLER (KAUKAUNA UTILITIES/KU)

DE-FOA-2470

KEY MILESTONES AND DELIVERABLES

- Year 1:
  - BESS plant and FLISR scheme design completion
  - Installation of 12 kV feeder of [redacted] installed for BESS interconnection
- Year 2:
  - BESS plant commissioned and online
  - Load/generation balancing scheme through feeder reconfiguration is developed
- Year 3:
  - All necessary upgrades are completed (such as reclosers, fiber, communications, etc.)
  - FLISR scheme is deployed and reliability studies are performed
- Year 4:
  - Microgrid control (MGC) specification developed
  - Testing and integration of MGCs, BESS, FLISR, and SCADA
- Year 5
  - MGCs and microgrid are commissioned and online
  - Use case demonstration and data collection for assessments
  - Performance of load/generation balancing scheme is evaluated and compared to a baseline

KU SERVICE TERRITORY



KAUKAUNA UTILITIES

U.S. DEPARTMENT OF ENERGY

Kaukauna Utilities
Indirect Cost Rate Proposals

This document provides Indirect Cost Rate Proposal methodologies for Kaukauna Utilities. Kaukauna Utilities proposes the indirect cost proposal based on the single rate method as instructed in budget justification workbook from department of energy website [1] .

Table 1 provides a breakdown of the proposed indirect rates.

Table 1. General Ledger providing breakdown of the indirect cost components

(b) (4)

[redacted]

[1] https://www.energy.gov/eere/funding/downloads/sample-indirect-rate-proposal-and-profit-compliance-audit

Other Attachment File(s)

*** Mandatory Other Attachment Filename:** 1234-Summary.pdf

Add Mandatory Other Attachment | Delete Mandatory Other Attachment | View Mandatory Other Attachment

To add more "Other Attachment" attachments, please use the attachment buttons below.

Add Optional Other Attachment | Delete Optional Other Attachment | View Optional Other Attachment

BUDGET INFORMATION - Non-Construction Programs

OMB Number: 4040-0006
Expiration Date: 02/28/2025

SECTION A - BUDGET SUMMARY

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget		
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)	Total (g)
1. BUDGET PERIOD 1		$	$	$ 159,526.00	$ 1,582,948.00	$ 1,742,474.00
2.						
3.						
4.						
5. Totals		$	$	$ 159,526.00	$ 1,582,948.00	$ 1,742,474.00

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Prescribed by OMB (Circular A -102) Page 1

SECTION B - BUDGET CATEGORIES

6. Object Class Categories	GRANT PROGRAM, FUNCTION OR ACTIVITY (1) BUDGET PERIOD 1	(2)	(3)	(4)	Total (5)
a. Personnel	$ 421,218.00	$	$	$	$ 421,218.00
b. Fringe Benefits	294,853.00				294,853.00
c. Travel	3,630.00				3,630.00
d. Equipment	737,433.00				737,433.00
e. Supplies	4,500.00				4,500.00
f. Contractual	220,340.00				220,340.00
g. Construction	60,500.00				60,500.00
h. Other	0.00				0.00
i. Total Direct Charges (sum of 6a-6h)	1,742,474.00				$ 1,742,474.00
j. Indirect Charges	0.00				$ 0.00
k. TOTALS (sum of 6i and 6j)	$ 1,742,474.00	$	$	$	$ 1,742,474.00
7. Program Income	$	$	$	$	$

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SECTION C - NON-FEDERAL RESOURCES

(a) Grant Program	(b) Applicant	(c) State	(d) Other Sources	(e)TOTALS
8. BUDGET PERIOD 1	$	$	$	$
9.				
10.				
11.				
12. TOTAL (sum of lines 8-11)	$	$	$	$

SECTION D - FORECASTED CASH NEEDS

	Total for 1st Year	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
13. Federal	$	$	$	$	$
14. Non-Federal	$				
15. TOTAL (sum of lines 13 and 14)	$	$	$	$	$

SECTION E - BUDGET ESTIMATES OF FEDERAL FUNDS NEEDED FOR BALANCE OF THE PROJECT

(a) Grant Program	FUTURE FUNDING PERIODS (YEARS)			
	(b)First	(c) Second	(d) Third	(e) Fourth
16. BUDGET PERIOD 1	$	$	$	$
17.				
18.				
19.				
20. TOTAL (sum of lines 16 - 19)	$	$	$	$

SECTION F - OTHER BUDGET INFORMATION

21. Direct Charges:

22. Indirect Charges:

23. Remarks: More budget period information is located in the list of attachments under the "Other Attachments" Form as the discrepancy between files depending on origin of download made uploading the document impossible.

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C.1352

OMB Number: 4040-0013
Expiration Date: 02/28/2025

1. * Type of Federal Action:

- [ ] a. contract
- [x] b. grant
- [ ] c. cooperative agreement
- [ ] d. loan
- [ ] e. loan guarantee
- [ ] f. loan insurance

2. * Status of Federal Action:

- [ ] a. bid/offer/application
- [x] b. initial award
- [ ] c. post-award

3. * Report Type:

- [x] a. initial filing
- [ ] b. material change

4. Name and Address of Reporting Entity:

[x] Prime [ ] SubAwardee

** Name* Kaukauna Utilities

** Street 1* 777 Island Street *Street 2*

** City* Kaukauna *State* WI: Wisconsin *Zip* 54130

Congressional District, if known: 8

5. If Reporting Entity in No.4 is Subawardee, Enter Name and Address of Prime:

6. * Federal Department/Agency:

Department of Energy

7. * Federal Program Name/Description:

Grid Infrastructure Deployment and Resilience

CFDA Number, *if applicable:* 81.254

8. Federal Action Number, *if known:*

9. Award Amount, *if known:*

$

10. a. Name and Address of Lobbying Registrant:

Prefix ** First Name* N/A *Middle Name*

** Last Name* N/A *Suffix*

** Street 1* N/A *Street 2*

** City* N/A *State* WI: Wisconsin *Zip* 54130

b. Individual Performing Services (including address if different from No. 10a)

Prefix ** First Name* N/A *Middle Name*

** Last Name* N/A *Suffix*

** Street 1* N/A *Street 2*

** City* N/A *State* WI: Wisconsin *Zip* 54130

11. Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when the transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

*** Signature:** Clara Pickett

***Name:** *Prefix* ** First Name* Clara *Middle Name*

** Last Name* Pickett *Suffix*

Title: **Telephone No.:** **Date:** 05/19/2023

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Community Benefits Plan: Job Quality and Equity

1. Community and Labor Engagement

Kaukauna Utilities (KU) is dedicated to meeting our customers' needs while helping to make the community a better place to live and work. A seven-person utility commission, appointed by the City Council, decides how to operate KU. This local representation and control allow all citizens a voice in how our utility best meets the community's needs. Community ownership and control is the hallmark of public power—local people working together to meet local needs. KU's commitment to the community is founded on the following principles:

- Reliable energy
- Trust
- Community assets
- Customer service
- Environmentally friendly
- Lower-cost energy

KU is committed to community engagement. To be a community-owned utility, we exist to provide a public service for—rather than profit from—the residents and businesses of the community. KU upholds community values by encouraging community members to have an active voice and participate in decisions about municipal utility operations during open public meetings. Because all decisions are made locally, as a municipal utility, we can uniquely respond to our community's needs, build on our community's strengths, and reflect and advance our community's values. Locally, KU actively participates in the Chamber of Commerce. As an active member of the Chamber of Commerce since 1978, we have been constantly networking with other local businesses to share valuable information and improve the local economy. KU also serves as part of the Federally recognized Tribal Government Oneida Nation of Wisconsin's Reservation, which will directly benefit from the increased resilience of the KU electric distribution system described in this proposal.

KU is governed by a municipal Public Utility Commission of several elected officials. These Commission members ensure that the perspective of community stakeholders is incorporated into all utility projects and operations. This Commission approves utility projects during the annual budget process, and details of each project are included in the annual budget documentation made available to the public. Monthly Commission meeting details are also published in the local newspaper. All aspects of this project will be available to the public as we are a publicly owned, not-for-profit municipal electrical utility that the Public Service Commission of Wisconsin (PSCW) regulates.

Leveraging these mechanisms and relationships, KU will establish a community benefits agreement specific to this project. The community benefits agreement will seek to co-create strategies, to the extent feasible, for the implementation and deployment of technologies to maximize community resilience while also minimizing implementation disruptions (e.g.,

construction processes). This agreement will be developed through community workshops and promulgated through the Public Utilities Commission. Additional community engagement will include at least two community workshops per project year to gather community feedback for continuous co-design and to update and discuss progress relevant to the community benefits agreement.

Table 1. Community and Labor Engagement Milestones

Milestone	Metric	Data Source	Year
Promulgation of project-specific community benefits agreement	Promulgation of community benefits agreement	Project team and Public Utility Commission action notes	1
Completion of two project-specific community workshops each year	Completion of community workshops	Project team community engagement data	1–5
Milestones in the community benefits agreement	Progress toward milestones in the community benefits agreement	Project team community engagement data	2–5

2. Investing in the American Workforce

2.1. Attracting, Training, and Retaining a Skilled Workforce

This project will greatly improve the reliability and resilience of KU's electric distribution system for all customers, including all large customers within our service territory. These large customers are national corporations that employ thousands of local workers and provide competitive wages. The proposed microgrid system, along with the distribution automation and fault location, isolation, and service restoration (FLISR) schemes, will help reduce service disruption, reducing any revenue loss from power outages at large corporations. The system improvements will also attract business owners to the area with opportunities for commercial and industrial facilities to operate within KU's reliable and resilient service territory.

Employee safety is a priority for all employees at KU. In addition to safety, KU has recently implemented the 2025 Strategic Intent. In this intent, we strive to record employee satisfaction and engagement from all employees. This will be achieved through employee satisfaction surveys, improved communication at all levels, and collaboration among department personnel. We also promote continuous improvement within our organization and encourage all employees to pursue educational opportunities. KU aims to provide all employees with the soft skills and leadership training required for their role by June 2024. Lastly, KU has always provided a competitive wage and benefits package. To further improve these offerings, KU completed a wage study in 2022 to maintain competitive wages, "good jobs," and further develop the employee performance review process.

Through the 2022 wage study, KU maintains wages and benefits equal to or over industry jobs in the service area and region. In the life of this project, it is anticipated that KU will contract local companies and talent for the construction, installation, and commissioning of the various project phases, directly creating additional jobs. In addition, we have added one full-time

equivalent Operational Technology Specialist to facilitate long-term operation and maintenance of the developing technologies.

KU will work with the local technical colleges to provide internship and apprenticeship opportunities for students to train in energy storage, distribution automation, and microgrid technology. KU works with Northeast Wisconsin Technical College (NWTC), the local technical college, and offers CESA6 programs for apprenticeships (RAPS) and STEM internships. This project will allow KU to work with these resources to incorporate even more STEM and new energy technology within their programs.

Furthermore, the job recruitment will focus on communities in disadvantaged areas (see Justice40 section below) to offer career entry and advancement opportunities in these fields. Job recruitment will also seek to recruit among under-represented demographics, particularly among women and communities of color.

2.2. Violations and Collective Bargaining

KU has had no violations under the National Labor Relations Act, Fair Labor Standards Act, Occupational Safety and Health Act, Service Contract Act, Davis-Bacon Act, or Title VII of the Civil Rights Act in the past two years.

2.3. Job Retention and/or Transition and Other Workforce Development Opportunities

KU also engages the community through various community and education programs, such as the Minneapolis-based National Theatre for Children. KU provides educational materials and presentations to schools, service groups, and seniors. This includes Pedal Power, a bicycle-powered generator that teaches basic scientific concepts related to energy conversion, and PowerTOWN, an eight-foot education utility model. KU also provides annual facility tours to school groups and youth organizations.

KU also provides scholarship opportunities for local high school students to attend a post-secondary educational institution, including scholarships for students enrolling in the Electrical Power Distribution Program at one of the five technical colleges in Wisconsin where the program is offered. These programs will be expanded to feature the technologies deployed in this project, provide additional opportunities for supporting entry into the STEM fields, and facilitate access to high-quality utility and other technical jobs. For job retention, KU will invest in additional training for affected employees to ensure everyone has the skills to work with or on the new technology required by their jobs.

Table 2. Job and Workforce Milestones

Milestone	Metric	Data Source	Year
Reallocation of one recently created high-quality job opportunity to support this project	Number of new and expanded craft labor positions created in underserved communities under this project	Project team and utility labor data	2,4

Milestone	Metric	Data Source	Year
Implementation of STEM initiatives each year	Number of STEM initiatives provided and the number of participants	Project team and community outreach data	1-5

3. Diversity, Equity, Inclusion, and Accessibility

KU communicates regularly with large customers and the public to ensure all stakeholders can provide feedback on the utility's operations, in addition to a monthly public board meeting open to everyone. A multi-day open house was recently held at the KU facility. The public was invited to participate in several public power awareness activities, including an open forum encouraging communication between stakeholders and utility leadership.

KU partners with other local not-for-profit utilities—or public power utilities (PPU)—to share resources and lower costs through a diverse power supply portfolio and shared services, working to keep energy prices down over the long-term. The locally owned utilities serve the interest of our customers. Excess revenues stay in the local community and are invested in system improvements, shared with the local government to lower taxes, or returned to the customer in the form of lower rates.

As part of the community workshops described above, KU will work to ensure that representatives from organizations serving under-represented communities are at public workshops and provided with prominent roles on the agenda to ensure strong representation and participation in development and implementation efforts.

KU is also an equal opportunity employer and strives to maintain diversity and equality in the workplace. We are committed to ensuring that our organization recruits, hires, trains, and promotes, at all levels, the most qualified applicants without regard to race, color, religion, sex (including gender identity, sexual orientation, and pregnancy), national origin, age, disability, genetic information, veteran's status or any other protected class that exists now or in the future.

The KU project team consists of engineers and individuals with extensive backgrounds in the science and technology fields. We also promote the pursuit of STEM careers through our internship program. Through this internship program, we hire local students pursuing STEM careers and provide valuable on-the-job experience. The project team includes military veterans and women in the power industry. KU has embarked on a project to request our vendors, suppliers, or contractors to submit environmental and diversity, equity, and inclusion (DEI) plans established within their organizations in many cases.

As a public entity, KU strives to provide opportunities to local contractors by publishing bidding documents via local media outlets. During the bidding process, KU will solicit bids from qualified local contractors, ensuring contractors with local labor pools are used to complete the project. These organizations are vested in using local contractors to complete quality projects that make a difference in the community. Kaukauna will provide additional outreach to minority or

women-owned business enterprises (MWBEs) for awareness and to ensure that qualified bids are accessible and responded to by various suppliers.

Table 3. Diversity Milestones

Milestone	Metric	Data Source	Year
Encourage MWBE contractors and suppliers	Percentage of identified contractors and suppliers that are MWBEs	Project team data	1–5
Encourage improved representation of historically under-represented communities	Community partnerships representation relative to the proportion of the historically under-represented population in the community	Project team community engagement data	1–5
Maintain diversity on the project team	The proportion of under-represented groups on the overall project team	Project team labor data	1–5

4. Justice40 Initiative

According to the Climate and Economic Justice Screening Tool, the area adjacent to the KU central office building lies within the City of Kaukauna, which falls in the 69th percentile for low-income households and is identified as a disadvantaged community. In addition, KU provides service to an area of the federally recognized Oneida Nation of Wisconsin Reservation (the northernmost pink polygon). These disadvantaged communities (DACs) are depicted in Figure 1. This project will improve the reliability and resilience of all KU customers, including our DACs.

Approximately 30% of KU's customer load is satisfied by 7 hydroelectric generation plants. Renewable hydroelectric power is considered a low-carbon source with no negative environmental impacts on the communities we serve. 100% of the electricity provided to KU and City facilities is renewable. And our wholesale provider, WPPI, aims to be carbon neutral by 2050. Further, KU has recently implemented a beneficial electrification and environmental responsibility plan.

KU is a public power utility owned by the community. This project will help serve that same community, helping to ensure a resilient source of electric power now and into the future. This project will also increase resilience and access to clean energy technology provided by KU in the surrounding communities. This project and the knowledge gained by its implementation and operation will also help KU serve as an example for other neighboring utilities exploring the implemented technologies. The experience gained by this project would allow KU to define programs for customers to extend the potential microgrid installation opportunities to all customers in the service territory, allowing customers to pursue clean energy technologies. These clean energy microgrid systems would allow customers to isolate themselves from the grid and switch to customer-owned microgrid systems to maintain power. Additionally, with the help of this project, one of the main focus areas from our 2025 Strategic Intent can be met to improve the resilience and reliability of our infrastructure.

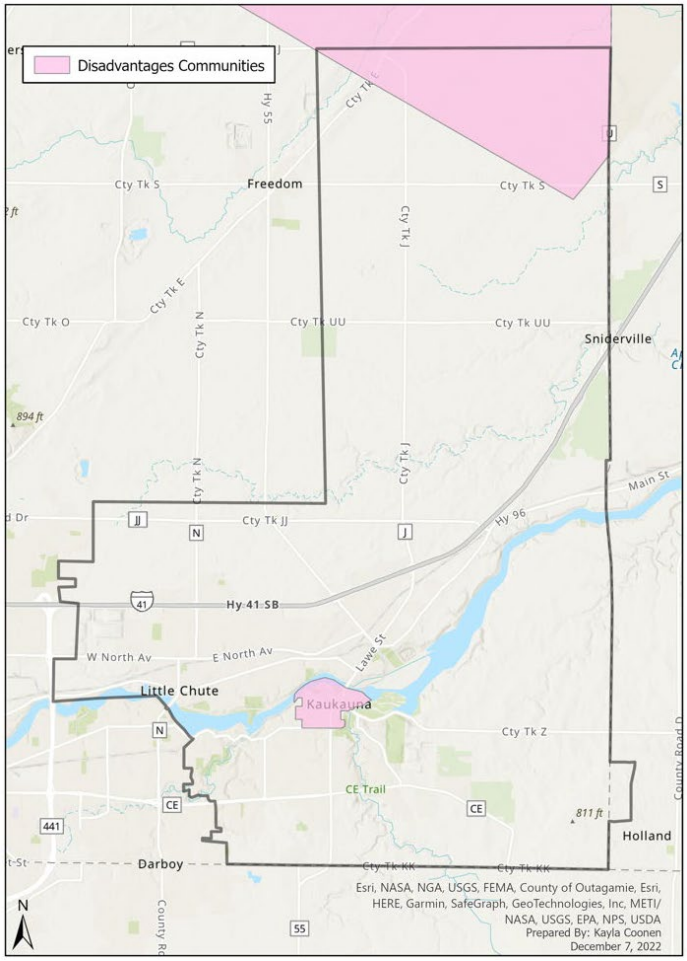

Figure 1. KU Service Area overlaid with communities identified as disadvantaged by the Climate and Economic Justice Screening Tool

4.1. Applicable Disadvantaged Communities Which the Anticipated Project Benefits Will Flow

KU works to keep the dollars in the community to help maintain a sound local economy. Customer savings from low utility rates allows for spending on other goods and services in the area. KU serves as an engine for economic development. Local flexibility and high-quality service offered by municipal utilities are major advantages for the community in attracting and retaining commercial and industrial customers. KU also makes significant payments to the city's general fund in lieu of taxes every year. As mentioned previously, KU has been actively participating in the local Chamber of Commerce since 1978, and we have constantly been networking with other local businesses to share valuable information and improve the local economy.

This placement and impact of these investments will, directly and indirectly, benefit the Justice40 goals. The primary impact of this effort will reduce the number of customers affected by planned and unplanned outages and the outage durations seen by them. As a result of enhanced grid resilience, the following benefits can be expected in line with Justice40 priorities:

- **Decreasing energy burden in DACs:** This priority will be supported by enhancing grid reliability and resilience and providing essential baseline improvements that will facilitate increased use of energy generated by 100% renewable sources (Hydro).
- **Decreasing environmental exposure and burdens for DACs:** This priority will be facilitated through the enhanced capacity for adopting alternatives to fossil fuel generation methods. Improved reliability and resilience will also reduce the number of outages requiring emergency generation using fossil fuel generation methods among customers. Additionally, since the hydropower plants are run-of-the-river, the chances of flooding increase when the generators do not work with the heavy flow on the river. The BESS is expected to keep the hydro generators running or reduce the time to bring the hydro generators back online, reducing the chances of flooding.
- **Increasing parity in clean energy technology (e.g., solar, storage) access and adoption in DACs:** This priority will be supported directly by the installation of the battery energy storage that helps keep the hydro generators online or reduce the for them to come back online from an outage, increasing DACs' access to the clean energy from the hydro generators.
- **Increasing access to low-cost capital in DACs:** This priority is expected to be catalyzed by improvements in reliability that will be facilitated by this project and from capital investments in the grid.
- **Increasing clean energy enterprise creation and contracting in DACs:** This priority will support contracts with minority business enterprise (MBE) and/or disadvantaged business enterprise (DBE) entities and through DACs as defined by the Climate and Economic Justice Screening Tool. The contracting for this project will include clean energy integration and storage specialists. Improvements will also facilitate a clean energy economy with a more robust and resilient electric grid.
- **Increasing clean energy jobs, job pipeline, and job training for individuals in DACs:** This priority will be addressed directly by the additional job training, creating a foundation of a skilled workforce for new technologies in the region.
- **Increased energy resilience in DACs:** This priority will be achieved through the support for integrating clean energy technologies and reducing the likelihood of load-shedding events. Additionally, it will enable advanced real-time monitoring and situational awareness and increase hydro generation resource uptime. The platform will support faster reaction times and informed decision-making in response to power outage events that will improve regional and community resilience.
- **Increasing energy democracy, including community ownership in DACs:** This priority will indirectly benefit this project. The modernization and resilience of the grid elements affected by this project will provide an important foundation for energy democracy and localized ownership of energy resources.

Table 4. Justice40 Initiative Milestones

Milestone	Metric	Data Source	Budget Period
Reduce all-in System Average Interruption Duration Index (SAIDI), extreme events included, in DACs	Standard SAIDI calculation with extreme events included and calculated based on customer locations	KU data	5
Reduced forecasted outage reduction for DACs	Using modeling data and approaches, the anticipated outages and outage durations due to extreme events in DACs are reduced	KU analysis	5
Potentially two new jobs are created in DACs directly related to project activities	Number of new jobs created through the project implementation	Project team and KU labor data	1–5
Representation of DACs in project planning	Communities represented among businesses and community organizations in community workshops	Project team community engagement data	1–5

Two-Page Resume – Kayla Coonen

1. Contact Information	
Name:	Kayla Coonen
Position Title and Institution:	Operational Technology Specialist, Kaukauna Utilities
Business Email:	kcoonen@ku-wi.org
Business Phone Number:	(920) 462-0242

2. Education			
Institution	**Major/Area of Study**	**Degree**	**Year(s)**
University of Wisconsin-Eau Clarie (UWEC)	Environmental Geography	BS	2014–2018
Missouri State University (MSU)	Geospatial Sciences in Geography, Geology, and Planning	MS	2018–2020

3. Training		
Certification/Credential	**Institution**	**Year(s)**
Geospatial Certificate with an emphasis in Digital Mapping	University of Wisconsin-Eau Claire	2014–2018

4. Professional Experience (Professional and Academic)		
Year(s)	**Position**	**Brief Description**
2021–Present	Operational Technology Specialist, Kaukauna Utilities	Full-Time. Maintain and develop the utility's GIS, OMS, AUD, and drafting in AutoCAD systems for the water, electric distribution, fiber, generations, and substations.
2020–2021	Land Use Specialist, La Crosse County Zoning, Planning and Land Information Department	Full-Time. Perform technical work relating to land use, such as mapping, parcel assignment, and review of land use plans by issuing permits, conditional uses, variances, and map drafting.
2018–2020	Research Assistant, Ozarks Environmental and Water Resources Institute, MSU	Part-Time. Conducted projects for GIS (related to watershed assessments using GIS, aerial photo interpretation, and watershed modeling), water and sediment quality projects, and assisted in technical report writing.
2017–2018	GIS Intern, Eau Claire County Planning and Development	Part-Time. Used GIS for parcel mapping, interpreting legal descriptions, and using coordinate geometry (COGO) procedures.
2016–2018	Undergraduate Research Assistant, UWEC Geography and Anthropology Dept. & Economics Dept.	Part-Time. (1) Collaborated with two graduate students in their preliminary thesis work to identify linear dunes using LiDAR-derived DEMs from the geography department at Minnesota State University, Mankato.

Two-Page Resume – Kayla Coonen

		(2) Groups investigated retired farmland to provide land-use recommendations based on observed soil characteristics by assessing hand-excavated soil pits. (3) Conducted statistical analysis on a series of questions about the public perception of climate change between the US and China.
2016	Summer Field Worker at Darboy Joint Sanitary District	Full-Time. Turned water valves for the city and tested water meters and hydrants.
2015–2017	Student Worker at UWEC Mailroom	Part-Time.
Summer 2014, 2015	Summer Factory Worker at Jansport	Full-Time.
2013–2014	Cashier at Walgreens	Part-Time.

Two-Page Resume – Clara Pickett

1. Contact Information	
Name:	Clara Pickett
Position Title and Institution:	Finance & Administration Director, Kaukauna Utilities
Business Email:	cpickett@ku-wi.org
Business Phone Number:	(920) 462-0239

2. Education			
Institution	**Major/Area of Study**	**Degree**	**Year(s)**
University of Wisconsin – Green Bay	Business Administration – Management and Accounting	BS	2003–2007

3. Training		
Certification/Credential	**Institution**	**Year(s)**
Certified Public Accountant	State of Wisconsin	2009 – Present

4. Professional Experience (Professional and Academic)		
Year(s)	**Position**	**Brief Description**
2017 – Present	Finance and Administration Director, Kaukauna Utilities	Ensure fiscal stability and positive utility customer relations by managing utility finances and providing financial analysis and recommendations. Oversee accounting and financial operations, customer service, purchasing, and general administrative support functions.
2013–2017	Finance Director, Village of Allouez, Wisconsin	Responsible for overseeing the municipal and utility financial operations, including financial analysis, recommendation, and development of fiscal policies and procedures. Provide leadership to plan, organize, direct, and evaluate the work of staff involved with various fiscal activities, including payroll, accounts payable, and utility bookkeeping functions.
2007–2013	Audit Supervisor, Schenck SC	Specialized in government and non-profit accounting and auditing. Responsible for leading audit teams and directing staff. Provide leadership during audits and evaluations of others for ongoing improvement. Responsible for developing audit plans, evaluating accounting operations, and coordinating fieldwork of multiple engagements. Extensive experience in preparing annual financial statements and other required governmental reporting. Conducted

		numerous compliance audits related to state and federal funding while keeping current on guidance and compliance requirements of the U.S. Office of Management and Budget (OMB) Circular A-133 Compliance Supplement and the State Single Audit Guidelines issued by the Wisconsin Department of Administration.

Two-Page Resume – Dave Pahl

1. Contact Information	
Name:	Dave Pahl
Position Title and Institution:	Engineering and Operations Director
Business Email:	dpahl@ku-wi.org
Business Phone Number:	(920) 462-0216

2. Education			
Institution	**Major/Area of Study**	**Degree**	**Year(s)**
University of Wisconsin – Oshkosh	Business Administration	MBA	2016–2018
University of Wisconsin – Madison	Electrical Engineering	BSEE	1997–2002

3. Training		
Certification/Credential	**Institution**	**Year(s)**
N/A	N/A	N/A

4. Professional Experience (Professional and Academic)		
Year(s)	**Position**	**Brief Description**
10/2022 – Present	Engineering and Operations Director, Kaukauna Utilities	Promoted to ensure the overall operation of Kaukauna Utilities' electric and water systems through the development and implementation of the utility's short- and long-range strategy. Providing leadership and management for the Engineering & Operations department are vital to the success of these strategies. HIGHLIGHTS: - Establish short- and long-term goals and objectives that align department and organizational strategies. - Leads the "Utility of the Future" focus area in Kaukauna Utilities' strategic intent to promote and implement technologies and processes that will enhance the quality of life of Kaukauna Utilities stakeholders. - Led Beneficial Electrification / Environmental Responsibility Committee to produce a long-term plan to guide Kaukauna Utilities along a more sustainable path. - Prepare annual budgets and long-range financial plans while monitoring actual to-budget results for all teams within the Engineering and Operations department.
11/2018 – 10/2022	Manager of Generation and Substations, Kaukauna Utilities	Promoted to improve preventative maintenance program for substations. Ensured maintenance plans exceeded the recommendations of NETA, allowing for the identification of degrading equipment before failure and increasing reliability. HIGHLIGHTS:

Two-Page Resume – Dave Pahl

		- Maintained average hydro generation run-time greater than 98%, achieving all-time record hydro-production in 2020. - Spearheaded launch of first outage management system integrated with SCADA, advanced metering infrastructure (AMI), geographic information system (GIS), customer information system (CIS), interactive voice response (IVR), and two-way text integration to allow for faster response and restoration times during power outages. - Selected to the Strategic Planning committee to help identify the future direction of the utility and develop strategies to achieve stakeholder visions. - Identified emerging technology to increase system reliability as project lead for a future technology initiative.
12/2014 – 11/2018	Systems Engineer, Kaukauna Utilities	Oversaw preventative maintenance program for substations with a focus on identifying the degrading of equipment prior to failure. Selected to Outage Management Task Force to create a member roadmap to manage outages based on geographic location. HIGHLIGHTS: - Managed crew safety by evaluating switching procedures and training staff on proper safety protocol. - Designed a work order system integrated with the new GIS solution to streamline workflow and project process. - Trained and developed the Line Distribution department on substation design practices and efficient use of the GIS system. - Enabled shared line repair identification after spearheading the creation of web applications for the GIS system.
5/2007 – 12/2014	Electrical Engineer, Steinmetz Corporation	Provided engineering, project management, and commissioning services for power systems in the commercial, industrial, and utility industries. Completed coordination, short circuit, arc flash, load flow, and harmonic studies to identify and develop capital improvement projects for customers.

Two-Page Resume – Eric Miller

1. Contact Information	
Name:	Eric Miller
Position Title and Institution:	Manager of Engineering & Project Management, Kaukauna Utilities
Business Email:	emiller@ku-wi.org
Business Phone Number:	(920) 462-0214

2. Education			
Institution	**Major/Area of Study**	**Degree**	**Year(s)**
UW-Center Marshfield	Physics / Science	N/A	1990–1992
UW-Platteville	Electrical Engineering	MS-EE	1992–1995

3. Training		
Certification/Credential	**Institution**	**Year(s)**
Mid-level Management Certificate	UW-Madison	1997–1998

4. Professional Experience (Professional and Academic)		
Year(s)	**Position**	**Brief Description**
2022+	DEED Board of Directors, American Public Power Association	American Public Power Association's (APPA) R&D Board of Directors
2022+	Mgr. of Engineering & Project Management, Kaukauna Utilities	General management of engineering and large projects for the entire utility
2014-2022	Mgr. of Eng. & Elect. Distribution, Kaukauna Utilities	General management of engineering supervisor and line superintendent
2007-2014	Mgr. of Electric Distribution, Kaukauna Utilities	General management of electric distribution (GIS implementation, AMI, etc.)
2000-2007	Distribution Supervisor, Kaukauna Utilities	All of the above + stores/purchasing, metering, budget, management of line crew and support staff, GIS implementation
1995-2000	Distribution Engineer, Marshfield Electric	System planning, design, engineering, work with customers, project management

Two-Page Resume – Michael Avanzi

1. Contact Information	
Name:	Michael Avanzi
Position Title and Institution:	General Manager, Kaukauna Utilities
Business Email:	mavanzi@ku-wi.org
Business Phone Number:	(920) 462-0218

2. Education			
Institution	**Major/Area of Study**	**Degree**	**Year(s)**
Christian Brothers University	Electrical Engineering	BS	1999–2003
Union University	Business Administration	MA	2005–2007

3. Training		
Certification/Credential	**Institution**	**Year(s)**
Professional Engineer, Electrical and Computer Engineering (Power)	State of Tennessee	2008–Present

4. Professional Experience (Professional and Academic)		
Year(s)	**Position**	**Brief Description**
11/2021 – Present	General Manager, Kaukauna Utilities	Chief Executive Officer for Kaukauna Utilities, directing staff of 60 in more than 20 different job classifications responsible for providing safe, reliable, competitively priced electricity and water to about 16,000 customers.
4/2021 – 10/2021	Manager, Electric Construction and Maintenance, Colorado Springs Utilities	Directed staff of 90 in 25 different job classifications responsible for all construction and maintenance activities with the transmission, distribution, and streetlight systems.
12/2017 – 4/2021	Manager, Energy Planning and Innovation, Colorado Springs Utilities	Directed staff of 35 responsible for long-term resource, transmission, and distribution planning and design for the electric/gas systems, each serving over 200,000 customers.
08/2016 – 12/2017	Managing Engineer, Gas Planning and Design, Colorado Springs Utilities	Directed staff of 4 direct reports responsible for all planning, design, project management, and operations support of the gas distribution system serving Colorado Springs.
01/2015 – 07/2016	Project Manager, TVA Combined Cycle Plant Gas Pipeline, Memphis Light, Gas, and Water	Managed a project to construct a new natural gas transmission pipeline and associated facilities to serve the new TVA Combined Cycle Plant in Memphis.
07/2012 – 01/2016	Supervisor, Gas Engineering, Memphis Light, Gas, and Water	Directed staff of 12 direct reports responsible for all planning, engineering, project management, and

		operations support of gas transmission and distribution system serving Memphis.

Two-Page Resume – Zach Moureau

1. Contact Information	
Name:	Zach Moureau
Position Title and Institution:	Environmental & Compliance Manager, Kaukauna Utilities
Business Email:	zmoureau@ku-wi.org
Business Phone Number:	(920) 462-0238

2. Education			
Institution	**Major/Area of Study**	**Degree**	**Year(s)**
University of Wisconsin – Green Bay	Environmental Science	BS	2008–2011

3. Training		
Certification/Credential	**Institution**	**Year(s)**
N/A	N/A	N/A

4. Professional Experience (Professional and Academic)		
Year(s)	**Position**	**Brief Description**
2021–Present	Environmental & Compliance Manager, Kaukauna Utilities	Responsible for managing and coordinating the regulatory and environmental processes and programs required to operate hydroelectric power generation, drinking water systems, and electric distribution systems.
2018–2021	Environmental Manager, Winnebago County Department of Solid Waste	Responsible for managing the permitting and regulatory compliance for three closed landfill facilities and the associated landfill gas to energy systems, landfill cover and gas extraction systems, and groundwater monitoring well network.
2015–2018	Environmental Scientist, The Foth Companies	Project consultant for permitting and regulatory compliance of active and closed landfill systems. Project manager for environmental remediation projects. Lead construction quality manager for landfill construction projects.
2014–2015	ESQ Scientist, Tetra Tech	Responsible for environmental, health, and safety for Lower Fox River PCB contaminated sediment dredging project and sediment treatment facility.
2012–2014	Project Scientist, Professional Service Industries	Responsible for completing environmental site assessments and management of environmental remediation projects for contaminated properties along with associated state and federal permitting.

PROJECT DESCRIPTION AND ASSURANCES DOCUMENT (PDAD)

Project title: Kaukauna Utilities Grid Resilience Project (Electric City Microgrid Project)

Applicant Name: Kaukauna Utilities

Applicant Address: 777 Island Street Kaukauna, WI 54130

Names of all team member organizations (if applicable): Kaukauna Utilities

Principal Investigator (Name, Address if different than Applicant's, Phone Number, E-mail):
Eric Miller: same address as above. (920) 462-0214 emiller@ku-wi.org

Business Point of Contact (Name, Address if different than Applicant's, Phone Number, E-mail):
Clara Pickett: same address as above. (920) 462-0239 cpickett@ku-wi.org

Include any statements regarding confidentiality. N/A

Federal Share: $3,012,462
Cost Share: $3,120,031
Total Estimated Project Cost: $6,132,493

Item 1: Specify (mark with "X")" the FOA Topic Area and as applicable the Area of Interest (AOI):

_____Topic Area 1: **Grid Resilience Grants** (BIL section 40101(c))

_____Topic Area 2: **Smart Grid Grants** (BIL section 40107)

_____Topic Area 3: **Grid Innovation Program** (BIL section 40103(b)) – Area of Interest 1 (**Transmission** System Applications)

___X___Topic Area 3: **Grid Innovation Program** (BIL section 40103(b)) – Area of Interest 2 (**Distribution** System Applications)

_____Topic Area 3: **Grid Innovation Program** (BIL section 40103(b)) – Area of Interest 3 (**Combination** System Applications)

TOPIC AREA 1 Specific Items:

Item 2: Specify (mark with "X")" the entity type of the applicant organization:

_____electric grid operator

_____electricity storage operator

_____electricity generator

_____transmission owner or operator

_____distribution provider

_____fuel supplier

If further description is needed for the specified entity type, please provide below:

Item 3: Please provide the total amount (USD) of qualifying resilience investments (as outlined in DE-FOA-00002740) that has been spent for the previous 3 years. Please also provide the time period utilized for calculation of this amount.

Total Amount:
Time Period for Resilience Investments:

Note: Topic Area 1 applicants must submit as part of their application a report detailing past, current, and future efforts by the eligible entity to reduce the likelihood and consequences of disruptive events. This report should include efforts over at least the previous 3 years and at least the next 3 years and any broader resilience strategy used by the applicant.

Item 4: Is the eligible entity a Small Utility as defined in DE-FOA-0002740 (sells no more than 4,000,000 MWh of electricity per year)? If NO is selected, skip to Item 7.

_____Yes

_____No

Note: If YES, applicant must provide their Form 861 for the last reporting year submitted to the Energy Information Administration (EIA).

Item 5: Per BIL section 40101(e)(2) (C) APPLICATION LIMITATIONS. —An eligible entity may not submit an application for a grant provided by the Secretary under subsection (c) and a grant provided by a State or Indian Tribe pursuant to subsection (d) during the same application cycle.

Therefore, is the eligible entity a Subaward/Subcontract recipient for an application submitted under IIJA Section 40101(d), ALRD 2736? If "YES", please describe the differences between the GRIP FOA 2740 application [40101(c)] and the ALRD 2736 [40101(d)] applications in the box below:

_____Yes

_____No

TOPIC AREA 2 Specific
No items

TOPIC AREA 3 Specific

Item 6: Specify (mark with "X")" the entity type of the applicant organization:

_____a State

_____a combination of 2 or more States

_____an Indian Tribe

____X____a unit of local government

_____a public utility commission

If further description is needed for the specified entity type, please provide below:

Item 7:

Authorized Organizational Representative (AOR): please provide name, address, phone number and e-mail address for the authorized agent to bind the entity.

Authorized Organizational Representative (AOR):

Name:	**Clara Pickett, CPA**
Address:	**777 Island Street Kaukauna, WI 54130**
Phone:	**920-462-0239**
E-mail:	**cpickett@ku-wi.org**

Item 8: Signature of Authorized Organizational Representative (AOR)

Clara Pickett

QUANTA TECHNOLOGY

4020 Westchase Boulevard
Suite 200
Raleigh, North Carolina 27607

PHONE 919.334.3000
WEB quanta-technology.com

19th May 2023

The Honorable Jennifer M. Granholm
Secretary, U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740Dear Secretary Granholm,

Dear Secretary Granholm,

Quanta Technology, LLC supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. Kaukauna Utilities' Grid Resilience Project will be key to advancing progress on Kaukauna Utilities' decarbonization, reliability and resilience goals.
The project proposes constructing an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin, area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20 percent interruption reduction. This project would also support the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power sector to at least 60% below 2005 levels and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

Quanta Technology is an independent technology, consulting, and testing company providing business and technical expertise, along with advanced methodologies and processes, to utilities and others in the power and energy industries. Kaukauna Utilities is currently working with Quanta Technology which brings vast experience in design, development, integration, and testing of Microgrids and Energy Storage System (ESS), to ensure that the battery sizing, microgrid design and costing estimates are as accurate as possible and adhere to the best industry practices. Additionally, Quanta Technology and Kaukauna Utilities have developed a strategic partnership to share knowledge and experience in developing and deploying critical power system platforms. Quanta Technology looks forward to continuing this successful partnership and is excited for the opportunity to support the Kaukauna Utilities' Grid Resilience Project which will not only help manage direct power interruptions but also mitigate flooding risk for stakeholders who live in the community, including a disadvantaged community located along the Lower Fox River in the City of Kaukauna. The Kaukauna Utilities has also worked to ensure several community public services and shelters will be served as part of the new power resilience improvement.

Quanta Technology wholeheartedly supports Kaukauna Utilities' efforts to receive Department of Energy's grant funds for the Kaukauna Utilities' Grid Resilience project. This critical Project and needed improvement will enhance electric reliability and resiliency in Kaukauna, Wisconsin area.
We are committed to supporting Kaukauna Utilities in successful implementation of the project.

Sincerely,

Farid Katiraei – VP of Advanced Technology Integration
Quanta Technology, LLC
fkatiraei@quanta-technology.com; Cell (647-330-7379)

DISTRICT DIRECTOR:
Brian M. Helminger

SERVING:
Combined Locks
Kaukauna
Kimberly
Little Chute
Darboy S.D.

COMMISSIONERS:
David J. Casper, President
Bruce M. Siebers, Vice-Pres.
Patrick E. Hennessey, Secretary
Kevin P. Coffey
John W. Sundelius

Heart of the Valley
METROPOLITAN SEWERAGE DISTRICT

801 THILMANY ROAD
KAUKAUNA, WISCONSIN 54130
(920) 766-5731 FAX (920) 766-5733
www.hvmsd.org

May 15, 2023

The Honorable Jennifer M.Granholm
Secretary, U.S. Dept. of Energy
1000 Independence Avenue SW
Washington, DC 20585

RE: HOVMSD Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

The Heart of the Valley Metropolitan Sewerage District (HOVMSD) supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The Kaukauna Utilities' Electric City Microgrid Project will advance progress on Kaukauna Utilities decarbonization, reliability and resilience goals.

As we all know, energy resiliency is becoming an increasingly pressing issue, with extreme weather events and other disruptions posing serious challenges to our energy systems. It is therefore crucial that we invest in projects that improve the reliability and resiliency of our energy infrastructure. The Project proposes to construct an energy storage facility and microgrid to improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves both HOVMSD and approximately 16,000 other customers. HOVMSD and local communities will benefit from improved reliability, with an estimated 20 percent reduction in interruptions. This Project supports both the State of Wisconsin's Clean Energy Plan and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

HOVMSD is excited about the project's reliability improvement as continuously reliable power is mission critical for the wastewater treatment services that HOVMSD provides to its member communities. Simply put, HOVMSD is unable to carry out its mission absent stable and reliable electric power. We are very pleased that Kaukauna Utilities is working to ensure HOVMSD plus several of our community public services and shelters will be served as part of this power resilience improvement.

We are pleased Kaukauna Utilities is taking the initiative to undertake this Project and improve the opportunities to assist in sustaining and growing our local economy. HOVMSD has a long-standing relationship with Kaukauna Utilities in many aspects especially operational consistency for HOVMSD so we can continue to protect public health, safety, and the quality of the environment. This critical Project is a needed improvement that will enhance electric reliability and resiliency in Kaukauna, Wisconsin.

We urge you to support Kaukauna Utilities in the successful funding and implementation of the Project.

Sincerely,

Brian Helminger

Brian Helminger
District Director

Kaukauna Housing Authority
Equal Housing Opportunity

125 W. 10th Street
Kaukauna, WI 54130
Phone: 920.766.4772
Fax: 920.759.2733
kha125@sbcglobal.net

May 15, 2023

The Honorable Jennifer M. Granholm
Secretary, U.S. Dept of Energy
1000 Independence Avenue, SW
Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

The Kaukauna Housing Authority supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The Kaukauna Utilities' Electric City Microgrid Project will be key to advancing progress on Kaukauna Utilities decarbonization, reliability and resilience goals.

The Project proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20 percent reduction in interruptions. This Project would also support the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power sector to at least 60% below 2005 levels and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

The Kaukauna Housing Authority is excited about the project's reliability improvement to not only manage direct power interruptions but also mitigate flooding for stakeholders that live in the community, including the disadvantaged community (DAC) located along the Lower Fox River in the City of Kaukauna. It is great that Kaukauna Utilities has also worked to ensure several community public services and shelters will be served as part of the new power resilience improvement including our housing facility for people with low income and the St. Paul's Elder Care Facility. The people who count on these facilities are often underserved. We will include in our communications illustration of how Kaukauna Utilities' Electric City Microgrid Project supports Diversity, Equity, and Inclusion (DEI) and Justice40 with regards to the project outcomes.

The Kaukauna Housing Authority wholeheartedly supports Kaukauna Utilities' efforts to receive Department of Energy's grant funds for the Kaukauna Utilities' Electric City Microgrid project. We are committed to supporting Kaukauna Utilities in successful implementation of the project.

Sincerely,

Pennie Thiele
Executive Director/Kaukauna Housing Authority

John Neumeier
Board Chairman/Kaukauna Housing Authority

MIKE GALLAGHER
8TH DISTRICT, WISCONSIN

1211 LONGWORTH HOUSE OFFICE BUILDING
WASHINGTON, DC 20515
(202) 225-5665

DISTRICT OFFICE:
1702 SCHEURING ROAD
SUITE B
DE PERE, WI 54115
(920) 301-4500

Congress of the United States
House of Representatives

SELECT COMMITTEE ON THE CHINESE COMMUNIST PARTY
CHAIRMAN

COMMITTEE ON ARMED SERVICES
CHAIRMAN, SUBCOMMITTEE ON CYBER, INFORMATION TECHNOLOGIES, AND INNOVATION
SUBCOMMITTEE ON SEAPOWER AND PROJECTION FORCES

COMMITTEE ON INTELLIGENCE
SUBCOMMITTEE ON THE CENTRAL INTELLIGENCE AGENCY
SUBCOMMITTEE ON THE NATIONAL SECURITY AGENCY AND CYBER

May 12, 2023

The Honorable Jennifer M. Granholm
Secretary, US Department of Energy
1000 Independence Ave. SW
Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

I write to you in support of the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program. The Kaukauna Utilities' Grid Resilience Project will be key to advancing progress on Kaukauna Utilities' decarbonization, reliability, and resilience goals.

The Project proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with substantial projected reduction in interruptions. This Project would also support the State of Wisconsin's Clean Energy Plan and is consistent with the Public Service Commission of Wisconsin's support for increased deployment of microgrid technology.

The US Army Corps of Engineers (USACE) manages flows through the Lower Fox River using flow releases from Lake Winnebago. This operation requires constant coordination between Kaukauna Utilities and the USACE. This long-standing coordination has built a reliable partnership focused on customers and the stakeholders around the Lower Fox River. This project will improve reliability to not only the USACE assets that control flow within the Lower Fox River and mitigate flooding but also the stakeholders that live in the community, including the disadvantaged community located along the Lower Fox River in the City of Kaukauna.

I am pleased Kaukauna Utilities is taking the initiative to undertake this Project and improve the opportunities to assist in sustaining and growing our local economy. This critical Project and needed improvement will enhance electric reliability and resiliency in the Kaukauna, Wisconsin area. I urge the Department of Energy to thoroughly consider Kaukauna Utilities' application for a GRIP program grant.

Sincerely,

Mike Gallagher
Member of Congress

5/8/2023

The Honorable Jennifer M. Granholm
Secretary, U.S. Dept of Energy
1000 Independence Avenue, SW Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

The Heart of the Valley Chamber of Commerce supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The Kaukauna Utilities' Electric City Microgrid Project will be key to advancing progress on Kaukauna Utilities decarbonization, reliability and resilience goals.

The Project proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20 percent reduction in interruptions. This Project would also support the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power sector to at least 60% below 2005 levels and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

The Heart of the Valley Chamber of Commerce is excited about the project's reliability improvement to not only manage direct power interruptions but also mitigate flooding for stakeholders that live in the community, including the disadvantaged community located along the Lower Fox River in the City of Kaukauna. It is great that Kaukauna Utilities has also worked to ensure several community public services and shelters will be served as part of the new power resilience improvement. The Heart of the Valley Chamber will continue to work with Kaukauna Utilities to engage business leaders and the surrounding communities to understand how this project will impact them by being a piece of the puzzle for economic sustainability and growth. Kaukauna Utilities offers Registered Apprenticeship Programs (RAPS) which also will continue to allow the Fox River Valley to compete for talent while offering good jobs.

The Heart of the Valley Chamber of Commerce wholeheartedly supports Kaukauna Utilities' efforts to receive Department of Energy's grant funds for the Kaukauna Utilities' Electric City Microgrid project. We are committed to supporting Kaukauna Utilities in successful implementation of the project.

Sincerely,

Nicci Sprangers

Nicci Sprangers
Executive Director

Municipal Electric Utilities of Wisconsin
725 Lois Drive
Sun Prairie, WI 53590
T: 608-837-2263
www.meuw.org

Tim Heinrich
President and CEO

May 8, 2023

The Honorable Jennifer M. Granholm
Secretary, U.S. Department of Energy
1000 Independence Avenue SW
Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm:

On behalf of the public power utilities in the state of Wisconsin, I write to support the Grid Resilience Project that Kaukauna Utilities (KU) is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program. KU's Electric City Microgrid Project will be key to advancing progress on the utility's decarbonization, reliability, and resilience goals. The learnings also will benefit other utilities in our state.

The project proposes to construct an energy-storage facility and microgrid to dramatically improve electric reliability and resiliency in the area around Kaukauna, Wisc., which comprises approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20% reduction in power interruptions. This project also advances the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power sector to at least 60% below 2005 levels. In addition, KU's plans align with the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

We at Municipal Electric Utilities of Wisconsin (MEUW) are excited about what the project means for KU and its customers. The reliability improvements are intended to not only manage direct power interruptions but also mitigate flooding for stakeholders who live in the community, including a disadvantaged area located along the Lower Fox River within the city. The power resilience improvements are also designed to benefit several community service agencies and shelters.

In particular, MEUW supports the project because of its focus on workplace safety. Among the services our trade association provides to KU is industry-specific safety training and support for its work crews. We expect that we will deliver any additional training for existing and new staff with regard to the new technology. Additionally, KU's Electric City Microgrid Project will serve as a great demonstration project for the other 80 community-owned utilities in Wisconsin that are part of our statewide organization and share concerns about the threats facing our industry.

MEUW is committed to supporting KU's successful implementation of this project. We wholeheartedly support their proposal and efforts to receive DOE grant funds for this critical project.

Sincerely,

Tim Heinrich
President and CEO

NORTHEAST
WI Technical College

Dr. H. Jeffrey Rafn, President

May 11, 2023

The Honorable Jennifer M. Granholm
Secretary
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

RE: *Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740*

Dear Secretary Granholm:

On behalf of Northeast Wisconsin Technical College (NWTC), please accept this letter of support for the *Grid Resilience Project* that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The project will be key to advancing progress on Kaukauna Utilities' decarbonization, reliability, and resilience goals.

The *Grid Resilience Project* proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20 percent reduction in interruptions. This project would also support the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power sector to at least 60% below 2005 levels and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

NWTC is excited about the project's reliability improvement to not only manage direct power interruptions but also mitigate flooding for stakeholders that live in the community, including the disadvantaged community located along the lower Fox River in the City of Kaukauna. It is also promising to see several community public services and shelters will be served as part of the new power resilience improvement. NWTC is also excited about Kaukauna Utilities bringing the microgrid and battery storage concept into the Fox River Valley as it will assist in recruiting students interested in learning how to work with this technology. NWTC will continue to support Kaukauna Utilities based on its current partnerships with its Registered Apprenticeship Program and existing workforce.

NWTC supports Kaukauna Utilities' efforts to receive Department of Energy grant funds as this critical project and needed improvement will enhance electric reliability, resiliency, and workplace safety in the Kaukauna and surrounding area. Thank you for your consideration of this request.

Sincerely,

Dr. H. Jeffrey Rafn
President

Oneida Nation
Oneida Business Committee
PO Box 365 • Oneida, WI 54155-0365
oneida-nsn.gov

ONEIDA

May 9, 2023

The Honorable Jennifer M. Granholm
Secretary, U.S. Dept of Energy
1000 Independence Avenue, SW Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

The Oneida Nation supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The Kaukauna Utilities' Electric City Microgrid Project will be key to advancing progress on Kaukauna Utilities decarbonization, reliability and resilience goals.

The Project proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20 percent reduction in interruptions. This Project would also support the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power sector to at least 60% below 2005 levels and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

Oneida Nation is excited about the project's reliability improvement to not only manage direct power interruptions but also mitigate flooding for stakeholders that live in the community, including the disadvantaged community located along the Lower Fox River in the City of Kaukauna. It is great that Kaukauna Utilities has also worked to ensure several community public services and shelters will be served as part of the new power resilience improvement. Although at this time the Oneida Nation has only a few residents served by Kaukauna Utilities, we feel it is an important step indirectly for reliability but also for showing others in the area what this new technology can provide residents while protecting people and environmental resources.

The Oneida Nation wholeheartedly supports Kaukauna Utilities' efforts to receive Department of Energy's grant funds for the Kaukauna Utilities' Electric City Microgrid project. This critical Project and needed improvement will enhance electric reliability, resiliency, and environmental safety in the Kaukauna and surrounding area.

We are committed to supporting Kaukauna Utilities in successful implementation of the project.
Sincerely,

Tehassi Hill

Tehassi Hill
Oneida Nation Tribal Chairman

5-10-23

Date

Smart Electric Power Alliance
1800 M Street, NW Front 1#33159
Washington, DC 20036

May 5th, 2023

The Honorable Jennifer M. Granholm
Secretary, U.S. Dept of Energy
1000 Independence Avenue, SW Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

The Smart Electric Power Alliance (SEPA) supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The Kaukauna Utilities' Electric City Microgrid Project will be key to advancing progress on Kaukauna Utilities decarbonization, reliability and resilience goals.

The Project proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20 percent reduction in interruptions. This Project would also support the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power sector to at least 60% below 2005 levels and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

SEPA is excited about the project's reliability improvement to not only manage direct power interruptions but also mitigate flooding for stakeholders that live in the community, including the disadvantaged community located along the Lower Fox River in the City of Kaukauna. The Kaukauna Utilities has also worked to ensure several community public services and shelters will be served as part of the new power resilience improvement. SEPA is a leader in accelerating Utility transformation to a carbon-free modern grid and will support Kaukauna Utilities with our subject matter expertise, industry recognized public platforms and energy industry contacts to expedite their implementation of battery storage and other modern grid technology. SEPA will also support the Project team by distributing and promoting the results and findings of the Project through our knowledge dissemination platforms, which include case studies, webinars, conference education, and working groups.

SEPA wholeheartedly supports Kaukauna Utilities' efforts to receive Department of Energy's grant funds for the Kaukauna Utilities' Electric City Microgrid project. This critical Project and needed improvement will enhance electric reliability, resiliency, and workplace safety in Kaukauna, Wisconsin area.

We are committed to supporting Kaukauna Utilities in successful implementation of the project. Sincerely,

Jared Leader
Senior Director, Resilience
SEPA

May 5, 2023

The Honorable Jennifer M. Granholm
Secretary, U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

The City of Kaukauna Mayor's Office and the Public Safety Departments (Police and Fire) of the City of Kaukauna supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The Kaukauna Utilities' Electric City Microgrid Project will be key to advancing progress on Kaukauna Utilities decarbonization, reliability and resilience goals.

The Project proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, WI area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20 percent reduction in interruptions. This Project would also support the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power sector to at least 60% below 2005 levels and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

The City of Kaukauna, including the Public Safety Departments, are in constant contact with Kaukauna Utilities whenever there are significant interruptions to power supplied to the City of Kaukauna area. This project will improve reliability to not only manage the direct power interruptions but also mitigate flooding for stakeholders that live in the community, including the disadvantaged community located along the Lower Fox River in the City of Kaukauna.

We are supporting Kaukauna Utilities taking the initiative to undertake this Project and commit to assisting by continuing to sustain and grow our local economy. Providing economic stability will help Kaukauna Utilities continue to provide good jobs with apprenticeship programs. The City of Kaukauna Mayor's Office and Public Safety Departments wholeheartedly supports Kaukauna Utilities' efforts to receive Department of Energy's grant funds for the Kaukauna Utilities' Grid Resilience project.

We are committed to supporting Kaukauna Utilities in successful implementation of the project.

Sincerely,

Anthony J. Penterman Mayor	William Van Rossum Finance Director & Treasurer	Jaime Graff Police Chief	Jacob Carrel Fire Chief

CITY OF KAUKAUNA **Office of the Mayor** Anthony J. Penterman 144 W 2nd Street Kaukauna, WI 54130 920.766.6310 **www.cityofkaukauna.com**

STATE OF WISCONSIN
DEPARTMENT OF ADMINISTRATION
Tony Evers, Governor
Kathy Blumenfeld, Secretary
Susan Brown, Division Administrator

May 17, 2023

The Honorable Jennifer M. Granholm
Secretary, US Department of Energy
1000 Independence Ave. SW
Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

The Wisconsin Office of Sustainability and Clean Energy supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The Kaukauna Utilities' Grid Resilience Project will be key to advancing progress on Kaukauna Utilities decarbonization, reliability and resilience goals.

The Project proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with a substantial projected reduction in interruptions. This Project would also support the State of Wisconsin's Clean Energy Plan to reduce net carbon emissions from the power and is consistent with the Public Service Commission of Wisconsin's support for increased deployment of microgrid technology.

The US Army Corps of Engineers (USACE) manages flows through the Lower Fox River using flow releases from Lake Winnebago. This operation requires constant coordination between Kaukauna Utilities and the USACE. This long-standing coordination has built a reliable partnership focused on customers and the stakeholders around the Lower Fox River. This project will improve reliability to not only the USACE assets that control flow within the Lower Fox River and mitigate flooding but also the stakeholders that live in the community, including the disadvantaged community located along the Lower Fox River in the City of Kaukauna.

We are pleased Kaukauna Utilities is taking the initiative to undertake this Project and improve the opportunities to assist in sustaining and growing our local economy. The Wisconsin Office of Sustainability and Clean Energy wholeheartedly supports Kaukauna Utilities' efforts to receive Department of Energy's grant funds for the Kaukauna Utilities' Grid Resilience project. This critical Project and needed improvement will enhance electric reliability and resiliency in Kaukauna, Wisconsin area.

We are committed to supporting Kaukauna Utilities in successful implementation of the project.

Sincerely,

Maria Redmond
Director, Wisconsin Office of Sustainability and Clean Energy
Department of Administration

1425 Corporate Center Drive Sun Prairie, WI 53590-9109 608.834.4500 wppienergy.org

Sent by email
May 16, 2023

I write today to provide a letter of commitment in support of Kaukauna Utilities' proposal to Program Solicitation DE-FOA-0002740 – Grid Resilience Innovation Partnerships (GRIP), Topic 3 – Grid Innovation Program; proposed project title "Kaukauna Utilities (KU) Grid Resilience Project."

We understand that this project represents a critical step forward for the resiliency of the electric grid upon which communities across the region rely for economic and social welfare.

Our organization, WPPI Energy, supplies the reliable, affordable, responsible wholesale electricity that KU delivers to local homes and businesses, helping the community to thrive. We also provide significant support in the form of funding for community development groups and initiatives, energy efficiency and renewable energy incentives, innovative electric rate design services, and energy industry expertise for sustainable community development.

WPPI's working relationship with KU is a longstanding and positive one. Since helping to found our joint action agency more than 40 years ago, the utility has remained actively engaged as a WPPI member, owner, and leader.

In addition to supplying wholesale power, WPPI's synergistic work with KU has included: locating our membership's 61-megawatt electric generation peaking plant in Kaukauna, where it is co-operated by KU staff; reducing CO_2 emissions associated with powering WPPI member communities by 45% from 2005 levels; supporting deployment of KU's advanced metering infrastructure and integrated outage management technologies; and supporting the installation and interconnection of nearly four dozen local renewable energy projects for KU customers.

As a municipal electric power company serving KU and 50 other not-for-profit, locally owned utilities throughout our region, WPPI is committed to supporting KU's efforts with a focus on how this work can help strengthen overall grid resilience and reliability. We are pleased to support KU's proposal, and we will collaborate and assist to the best of our ability.

Sincerely,
Mike Peters
President & CEO

CITIZENS UTILITY BOARD

Citizens Utility Board of Wisconsin, Inc.
Thomas Content - Executive Director

P.O. BOX 8983 | Madison, WI 53708-8983
608-251-3322 | staff@cubwi.org

May 17, 2023

The Honorable Jennifer M Granholm
Secretary, U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC 20585

RE: Support for Kaukauna Utilities' Grid Resilience Project: DE-FOA-0002740

Dear Secretary Granholm,

The Citizens Utility Board of Wisconsin (CUB) supports the Grid Resilience Project that Kaukauna Utilities is proposing as part of the U.S. Department of Energy's Grid Resilience and Innovation Partnership (GRIP) Grant program funded by the recent Infrastructure Investment and Jobs Act. The Kaukauna Utilities' Grid Resilience Project will be key to advancing progress on Kaukauna Utilities' decarbonization, reliability and resilience goals.

The Project proposes to construct an energy storage facility and microgrid to dramatically improve electric reliability and resiliency in the Kaukauna, Wisconsin area, which serves approximately 16,000 customers. The local communities will benefit directly from improved reliability, with an estimated 20 percent reduction in interruptions. This project would also support the State of Wisconsin's Clean Energy Plan to have 100 percent carbon-free electricity by 2050 and the Public Service Commission of Wisconsin's recommendation to deploy microgrid technology.

CUB is the consumer advocate for Wisconsin utility customers, specifically the residential and small business customers of Kaukauna Utilities. CUB's mission is to enhance reliability, safety and affordability of utility service and to enable an energy transition that is consumer centric. Customers of Kaukauna Utilities would see improved reliability from this project, and the project costs would not add to rate pressures that Wisconsin and Kaukauna customers face. Moreover, CUB sees potential for broader application of battery energy storage installations and microgrids to assure reliability and quality utility service as the industry transitions to more intermittent and distributed forms of energy. CUB expects the lessons learned from the Grid Resilience Project could be applied far across Wisconsin, well beyond the City of Kaukauna, and looks forward to analyzing and sharing outcomes of the project through our ongoing collaboration with Wisconsin energy and utility stakeholders.

We are pleased Kaukauna Utilities is taking the initiative to launch this Project, which, if funded, will improve service reliability, lower the costs that get passed on to customers, and help sustain the local economy. CUB wholeheartedly supports Kaukauna Utilities' efforts to receive Department of Energy grant funds for the Kaukauna Utilities' Grid Resilience project. This critical project will enhance electric reliability and resilience in the Kaukauna area and accelerate opportunities throughout Wisconsin.

CUB is committed to supporting Kaukauna Utilities in implementing the Grid Resilience Project.

Sincerely,

Thomas Content

Thomas Content
Executive Director
Citizens Utility Board of Wisconsin

Applicant Name: Kaukauna Utilities Award Number: M9MMKLB6PDJ3

Budget Information - Non Construction Programs

OMB Approval No. 0348-0044

Section A - Budget Summary

Grant Program Function or Activity (a)	Catalog of Federal Domestic Assistance Number (b)	Estimated Unobligated Funds		New or Revised Budget			
		Federal (c)	Non-Federal (d)	Federal (e)	Non-Federal (f)		Total (g)
1. Budget Period 1				$159,526	$1,582,948		$1,742,474
2. Budget Period 2				$1,965,017	$291,118		$2,256,135
3. Budget Period 3				$130,458	$479,858		$610,315
4. Budget Period 4				$440,722	$267,378		$708,100
5. Budget Period 5				$316,740	$498,729		$815,469
6. Totals				$3,012,462	$3,120,031		$6,132,493

Section B - Budget Categories

6. Object Class Categories	Grant Program, Function or Activity					Total (5)
	Budget Period 1	Budget Period 2	Budget Period 3	Budget Period 4	Budget Period 5	
a. Personnel	$421,218	$103,580	$70,015	$78,617	$145,989	$819,419
b. Fringe Benefits	$294,853	$72,506	$49,010	$55,032	$102,192	$573,593
c. Travel	$3,630	$6,090	$6,090	$9,330	$3,630	$28,770
d. Equipment	$737,433	$1,854,579	$40,000	$300,000	$171,814	$3,103,827
e. Supplies	$4,500	$0	$0	$0	$0	$4,500
f. Contractual	$220,340	$219,380	$335,200	$265,120	$391,844	$1,431,884
g. Construction	$60,500	$0	$110,000	$0	$0	$170,500
h. Other	$0	$0	$0	$0	$0	$0
i. Total Direct Charges (sum of 6a-6h)	$1,742,474	$2,256,135	$610,315	$708,100	$815,469	$6,132,493
j. Indirect Charges	$0	$0	$0	$0	$0	$0
k. **Totals** (sum of 6i-6j)	$1,742,474	$2,256,135	$610,315	$708,100	$815,469	$6,132,493
7. Program Income						$0

1425 Corporate Center Drive Sun Prairie, WI 53590-9109 608.834.4500 wppienergy.org

Sent by email
May 18, 2023

I write today to provide a letter of community partnership in support of Kaukauna Utilities' proposal to Program Solicitation DE-FOA-0002740 – Grid Resilience Innovation Partnerships (GRIP), Topic 3 – Grid Innovation Program; titled "Kaukauna Utilities (KU) Grid Resilience Project."

We understand that this project represents a critical step forward for the resiliency of the electric grid upon which communities across the region rely for economic and social welfare. Our organization, WPPI Energy, supplies the reliable, affordable, responsible wholesale electricity that KU delivers to local homes and businesses, helping the community thrive. We also provide energy efficiency and renewable energy incentives, innovative electric rate design services, and energy industry expertise for sustainable community development.

WPPI's working relationship with KU is a longstanding and positive one. Since helping to found our joint action agency more than 40 years ago, the utility has remained actively engaged as a WPPI member, owner, and leader. In addition to supplying wholesale power, WPPI's synergistic work with KU has included: locating our membership's 61-megawatt electric generation peaking plant in Kaukauna, where it is co-operated by KU staff; reducing CO_2 emissions associated with powering WPPI member communities by 45% from 2005 levels; supporting deployment of KU's advanced metering infrastructure and integrated outage management technologies; and supporting the installation and interconnection of nearly four dozen local renewable energy projects for KU customers.

WPPI is committed to supporting KU's proposed project. As a municipal power company serving locally owned utilities throughout our region, we will coordinate with KU on knowledge-sharing efforts such as delivering joint updates on our battery energy storage and microgrid technology insights for leaders across the 51 utilities in WPPI's membership. We expect that these offerings could be extended to reach additional municipal utilities throughout the region via webinar and/or industry conference presentations.

We are pleased to support KU's proposal, and we will assist to the best of our ability.

Sincerely,
Mike Peters
President & CEO

FIRST NAME:
LAST NAME:
ADDRESS: 777 Island St.
CITY, STATE, ZIP: Kaukauna, WI 54130
LOCATION: 777 Island St.
DATE OF WORK:
DESCRIPTION OF WORK: Install (3) 600 amp Primary pedestals, dig in new three phase 750 urd primary cable, pull in new primary cable over bridge in conduit, to energize new battery bank

ESTIMATOR
☐ Eric ☐ Neil ☑ Bria

WORK ORDER #:

☐ Temporary Service Required?

TITLE OF RECIPIENT
☐ Mr. ☐ Mrs. ☐ Ms.

LABOR & TRUCK

# OF LINECREW	6
ESTIMATED CREW HRS	120
# OF LINE TRUCKS	3
ESTIMATED TRUCK HRS	120
OVERTIME HOURS (1 1/2)	
BORING (FEET)($10/FT)	
TOTAL MAN-HOURS	720
COST PER MAN-HOUR	$84.51
TOTAL TRUCK-HOURS	360
COST PER TRUCK-HOUR	$25.00
TOTAL LABOR & TRUCK	**$274,145**

MATERIAL

SUBTOTAL MATERIAL	$29,629
40% EXEMPT / STORES	$14,815
TRANSFORMER COST	$0
TOTAL MATERIAL	**$44,444**

204298

☑ Customer Paid Extension
☐ Utility Work
☐ Monthly Service WO
☐ UG Primary Cable Replacement
☐ OH Primary Line Rebuild
☐ Monthly Street Light WO
☐ Non-reimbursed Road Construction
☐ Other:

☐ Billable
☐ Expense

☑ City of Kaukauna
☐ Village of Little Chute
☐ Village of Combined Locks
☐ Town of Buchanan
☐ Town of Vanden Broeck
☐ Town of Kaukauna
☐ Town of Freedom
☐ Town of Oneida
☐ Village of Wrightstown

For primary extensions:
Overhead Footage:
Underground Footage:
Removal:

TRANSFORMER COST

TRANSFORMER SIZE (IF > 112.5 kVA)	
TRANSFORMER COST	
COST PER kVA	$0.00
CUSTOMER COST	$0.00

Service Information:
Service size (Amps)
☐ Single Phase ☐ 120/208 ☐ 277/480

QTY	DESCRIPTION:	AGE	LIFE SPAN	END OF LIFE VALUE	PRESENT COST	TOTAL COST	SLN DEPREC
						$0.00	$0.00
							$0.00
						$0.00	$0.00
							$0.00
						SALVAGE	

TOTAL DEPRECIATED SALVAGE CREDIT **$0**

CREDITS

	CREDIT
URD SERVICE CREDIT (120' #4/0 URD TRIPLEX)	$0.00
OH SERVICE CREDIT (120' #1/0 TRIPLEX)	$0.00
# OF LIVING PLACES (APARTMENTS, LOTS, RESIDENCES)	$0.00
# OF GENERAL SERVICE PLACES	$0.00
LARGE POWER ANTICIPATED DEMAND (kW)	$0.00
# OF STREET LIGHTS	$0.00
OTHER CREDITS (UG SERVICE IN OH AREA=$243 FOR 100')	$0.00
TOTAL AVERAGE DEPRECIATED EMBEDDED COST CREDIT	**$0**

SUMMARY

MATERIAL	$44,444
TEMPORARY SERVICE CHARGE	$0
LABOR & TRUCK	$274,145
SUBTOTAL	**$318,589**
LESS SERVICE RULE CREDITS	$0
LESS DEPRICIATED SALVAGE	$0
TOTAL ESTIMATED COST	**$318,589**

Form Updated 9/1/22

Updated 14-Jan-19

W.O.# 777 Island St.

MATERIALS

#	PART #	DESCRIPTION		COST	SUBTOTAL
3	20850750	TERMINATOR, 15KV 500-1000 #7655-S-4	$	49.29	$147.86
75	43401040	WIRE, 4/0 STR BARE COPPER	$	4.98	$373.50
6	71051510	ARRESTER, 10KV URD W/ELBOW	$	67.13	$402.76
2100	**43501750**	**CABLE, 750 MCM ALUM URD PRI 220 MIL EPR**	$	5.13	$10,773.00
27	**20150750**	**ELBOW, 600 AMP, FOR 750 MCM CABLE (TP615FF25T)**	$	404.82	$10,930.14
9	32060600	MODULE, 3 POINT JUNCTION, 600 AMP (DJ625C3U)	$	425.11	$3,826.02
3	23010500	PEDESTAL, LARGE, 3-PH, W/BASMT, 600AMP	$	1,022.42	$3,067.25
8	**25006258**	**ROD, 5/8 IN. GROUND ROD 8 FT. LONG**	$	13.62	$108.96

FIRST NAME:
LAST NAME:
ADDRESS:
CITY, STATE, ZIP:
LOCATION:
DATE OF WORK:
DESCRIPTION OF WORK: Install (1) three phase padmount recloser unit

ESTIMATOR
☐ Eric ☐ Neil ☐ Bria

WORK ORDER #:

☐ Temporary Service Required?

TITLE OF RECIPIENT
☐ Mr. ☐ Mrs. ☐ Ms.

LABOR & TRUCK

# OF LINECREW.....	3
ESTIMATED CREW HRS.....	40
# OF LINE TRUCKS.....	2
ESTIMATED TRUCK HRS.....	40
OVERTIME HOURS (1 1/2).....	
BORING (FEET)($10/FT).....	
TOTAL MAN-HOURS.....	120
COST PER MAN-HOUR.....	$84.51
TOTAL TRUCK-HOURS.....	80
COST PER TRUCK-HOUR.....	$25.00
TOTAL LABOR & TRUCK.....	**$12,141**

MATERIAL

SUBTOTAL MATERIAL.....	$76,084
40% EXEMPT / STORES .	$38,042
TRANSFORMER COST....	$0
TOTAL MATERIAL.....	**$114,125**

☐ City of Kaukauna
☐ Village of Little Chute
☐ Village of Combined Locks
☐ Town of Buchanan
☐ Town of Vanden Broeck
☐ Town of Kaukauna
☐ Town of Freedom
☐ Town of Oneida
☐ Village of Wrightstown

☐ Customer Paid Extension
☑ Utility Work
☐ Monthly Service WO
☐ UG Primary Cable Replacement
☐ OH Primary Line Rebuild
☐ Monthly Street Light WO
☐ Non-reimbursed Road Construction
☐ Other:

☐ Billable
☐ Expense

For primary extensions:
Overhead Footage:
Underground Footage:
Removal:

TRANSFORMER COST

TRANSFORMER SIZE (IF > 112.5 kVA) ...	
TRANSFORMER COST.....	
COST PER kVA.....	$0.00
CUSTOMER COST.....	$0.00

Service Information:
Service size (Amps)
☐ Single Phase ☐ 120/208 ☐ 277/480

QTY	DESCRIPTION:	AGE	LIFE SPAN	END OF LIFE VALUE	PRESENT COST	TOTAL COST	SLN DEPREC
						$0.00	$0.00
							$0.00
						$0.00	$0.00
							$0.00

SALVAGE

TOTAL DEPRECIATED SALVAGE CREDIT **$0**

CREDITS

	CREDIT
URD SERVICE CREDIT (120' #4/0 URD TRIPLEX).....	$0.00
OH SERVICE CREDIT (120' #1/0 TRIPLEX).....	$0.00
# OF LIVING PLACES (APARTMENTS, LOTS, RESIDENCES).....	$0.00
# OF GENERAL SERVICE PLACES.....	$0.00
LARGE POWER ANTICIPATED DEMAND (kW).....	$0.00
# OF STREET LIGHTS.....	$0.00
OTHER CREDITS (UG SERVICE IN OH AREA=$243 FOR 100').....	$0.00
TOTAL AVERAGE DEPRECIATED EMBEDDED COST CREDIT.....	**$0**

SUMMARY

MATERIAL.....	$114,125
TEMPORARY SERVICE CHARGE.....	$0
LABOR & TRUCK.....	$12,141
SUBTOTAL.....	**$126,267**
LESS SERVICE RULE CREDITS.....	$0
LESS DEPRICIATED SALVAGE.....	$0
TOTAL ESTIMATED COST.....	**$126,267**

Form Updated 9/1/22

Updated 14-Jan-19

W.O.# 0

MATERIALS

#	PART #	DESCRIPTION		COST	SUBTOTAL
50	43401040	WIRE, 4/0 STR BARE COPPER	$	4.98	$249.00
200	**43501750**	**CABLE, 750 MCM ALUM URD PRI 220 MIL EPR**	$	5.13	$1,026.00
50	23060600	CARLON, 6 IN. PLASTIC PIPE, SCHED 40 (PER FT.)	$	3.03	$151.53
9	**20150750**	**ELBOW, 600 AMP, FOR 750 MCM CABLE (TP615FF25T)**	$	404.82	$3,643.38
1	23020525	PAD, FIBERCRETE BASEMENT - PSE/PME 9,10,11 SWITCHGEAR	$	986.43	$986.43
1	11111111	THREE PHASE PAD MOUNT RECLOSER	$	70,000.00	$70,000.00
2	**25006258**	**ROD, 5/8 IN. GROUND ROD 8 FT. LONG**	$	13.62	$27.24

FIRST NAME:
LAST NAME:
ADDRESS:
CITY, STATE, ZIP:
LOCATION:
DATE OF WORK:
DESCRIPTION OF WORK: Install three phase smart recloser on new pole

ESTIMATOR
☐ Eric ☐ Neil ☐ Bria

WORK ORDER #:

☐ Temporary Service Required?

TITLE OF RECIPIENT
☐ Mr. ☐ Mrs. ☐ Ms.

LABOR & TRUCK

# OF LINECREW	3
ESTIMATED CREW HRS	24
# OF LINE TRUCKS	2
ESTIMATED TRUCK HRS	24
OVERTIME HOURS (1 1/2)	
BORING (FEET)($10/FT)	
TOTAL MAN-HOURS	72
COST PER MAN-HOUR	$84.51
TOTAL TRUCK-HOURS	48
COST PER TRUCK-HOUR	$25.00
TOTAL LABOR & TRUCK	**$7,285**

MATERIAL

SUBTOTAL MATERIAL	$32,696
40% EXEMPT / STORES	$16,348
TRANSFORMER COST	$0
TOTAL MATERIAL	**$49,044**

☐ City of Kaukauna
☐ Village of Little Chute
☐ Village of Combined Locks
☐ Town of Buchanan
☐ Town of Vanden Broeck
☐ Town of Kaukauna
☐ Town of Freedom
☐ Town of Oneida
☐ Village of Wrightstown

☐ Customer Paid Extension
☐ Utility Work
☐ Monthly Service WO
☐ UG Primary Cable Replacement
☐ OH Primary Line Rebuild
☐ Monthly Street Light WO
☐ Non-reimbursed Road Construction
☐ Other:

☐ Billable
☐ Expense

For primary extensions:
Overhead Footage:
Underground Footage:
Removal:

TRANSFORMER COST

TRANSFORMER SIZE (IF > 112.5 kVA)	
TRANSFORMER COST	
COST PER kVA	$0.00
CUSTOMER COST	$0.00

Service Information:
Service size (Amps)
☐ Single Phase ☐ 120/208 ☐ 277/480

QTY	DESCRIPTION:	AGE	LIFE SPAN	END OF LIFE VALUE	PRESENT COST	TOTAL COST	SLN DEPREC
						$0.00	$0.00
							$0.00
						$0.00	$0.00
							$0.00

SALVAGE

TOTAL DEPRECIATED SALVAGE CREDIT **$0**

CREDITS

	CREDIT
URD SERVICE CREDIT (120' #4/0 URD TRIPLEX)	$0.00
OH SERVICE CREDIT (120' #1/0 TRIPLEX)	$0.00
# OF LIVING PLACES (APARTMENTS, LOTS, RESIDENCES)	$0.00
# OF GENERAL SERVICE PLACES	$0.00
LARGE POWER ANTICIPATED DEMAND (kW)	$0.00
# OF STREET LIGHTS	$0.00
OTHER CREDITS (UG SERVICE IN OH AREA=$243 FOR 100')	$0.00
TOTAL AVERAGE DEPRECIATED EMBEDDED COST CREDIT	**$0**

SUMMARY

MATERIAL	$49,044
TEMPORARY SERVICE CHARGE	$0
LABOR & TRUCK	$7,285
SUBTOTAL	**$56,329**
LESS SERVICE RULE CREDITS	$0
LESS DEPRICIATED SALVAGE	$0
TOTAL ESTIMATED COST	**$56,329**

Form Updated 9/1/22

Updated 14-Jan-19

W.O.# 0

MATERIALS

#	PART #	DESCRIPTION		COST	SUBTOTAL
1	17050335	ARM, FIBERGLASS PUPI TANGENT, TB2000, 8 FT	$	160.75	$160.75
6	**71510009**	**ARRESTER, 10KV DISTRIBUTION/ RISER**	$	59.86	$359.16
1	17050350	ARM, STEEL, FOR THREE PHASE BYPASS SWITCH	$	366.00	$366.00
1	12062050	POLE, 50 FT. CLASS 2, WESTERN RED CEDAR	$	962.34	$962.34
3	73150715	SWITCH, 15KV, 600A, REGULATOR BYPASS	$	1,573.00	$4,719.00
1	73150615	SWITCH, RECLOSER (MVR), 15KV THREE PHASE ASSEMBLY	$	26,100.00	$26,100.00
50	**47161004**	**WIRE, #4 SOL. SFT COPPER WIRE BARE**	$	0.30	$15.00
1	**25006258**	**ROD, 5/8 IN. GROUND ROD 8 FT. LONG**	$	13.62	$13.62