Environmental Impact Assessment

UW-Madison Kegonsa Research Campus Solar and Agricultural Research Project
Town of Dunn, Dane County, Wisconsin

Prepared for:

University of Wisconsin System Administration
Capital Planning and Budget
780 Regent Street Madison, WI 53715

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Town of Dunn, Dane County, Wisconsin

UW Kegonsa Research Campus
3725 Schneider Drive
Stoughton, WI 53589

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Contents

Page No.

List of Appendices

List of Appendix C Figures

Acronyms and Abbreviations

AHI	Architecture and History Inventory
ARI	Archaeological Report Inventory
ASI	Archaeological Sites Inventory
AT-35	Agricultural Transition
BbA	Bativa silt loam
BRRTS	Bureau of Remediation and Redevelopment Tracking System
CALS	College of Agricultural and Life Sciences
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CUP	Conditional Use Permit
DATCP	Department of Agriculture, Trade and Consumer Protection
DOA	Wisconsin Department of Administration
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERP	Environmental Repair Program
ERR	Endangered Resources Review
FEMA	Federal Emergency Management Agency
FP-35	General Farmland Preservation
Ft.	Feet
Hwy	Highway
kW	Kilowatt
LESA	Land Evaluation and Site Assessment
LF	Linear Feet
LLC	Limited Liability Company
MdC2	McHenry Silt Loam
MSL	Mean Sea Level
MW	Megawatt
MWHr	Megawatt-hour
NAAQS	National Ambient Air Quality Standards
NESC	National Electrical Safety Code
NR	National Resources
NR	National Register
PSL	UW Physical Sciences Lab
PV	Photovoltaic
REC	Renewable Energy Credits
ROW	Right-of-way
ScB	St. Charles silt loam
SEIA	Solar Energy Industry Association
SHWIMS	Solid and Hazardous Waste Information System
SPCC	Spill Prevention Control and Countermeasure
SRC	Synchrotron Radiation Center

UW	University of Wisconsin
KRC	UW Kegonsa Research Campus
USDA	United States Department of Agriculture
UW-Madison	University of Wisconsin-Madison
UWSA	University of Wisconsin System Administration
WDNR	Wisconsin Department of Natural Resources
WEPA	Wisconsin Environmental Policy Act
WHPD	Wisconsin Historical Preservation Database
WHS	Wisconsin Historical Society
WPDES	Wisconsin Pollutant Discharge Elimination System

Introduction

General

As required by the Wisconsin Environmental Policy Act (WEPA), Wisconsin Statutes 1.11, and University of Wisconsin System Administration's (UWSA) guidelines (Board of Regents' Resolution 2508, November 6, 1981), activities or projects being proposed on property owned by the Board of Regents that use state funds and/or may impact the environment needs to be suitably evaluated. The UWSA Capital Planning and Budget department has determined that the project described herein meets the definition of a Type II WEPA Action, requiring the preparation of an Environmental Impact Assessment (EIA). The project development team, consisting of SunVest Solar Limited Liability Company (LLC) on behalf of Wisconsin Power and Light (doing business as [DBA] "Alliant Energy") and in partnership with UWSA, the University of Wisconsin Madison (UW-Madison), and the Board of Regents of the University of Wisconsin System as the property owner, has retained Ayres Associates to comply with these provisions. The purpose of the EIA is to assess the project's potential impacts on the physical, biological, social, and economic environments.

General Project Description

The proposed project site is located on UW Board of Regents-owned property referred to as UW Kegonsa Research Campus (KRC), near 3725 Schneider Drive, west of Highway Hwy 51 and Lake Kegonsa between McFarland and Stoughton. The overall KRC site includes the Physical Sciences Lab (PSL), a research and development laboratory that specializes in the design, engineering, and construction of equipment used all over the world, as well as several other university research buildings and uses. This research campus is part of approximately 280-acres of UW-owned properties along Schneider Drive that is privately leased for agriculture use. The proposed project site is zoned General Farmland Preservation (FP-35) and is adjacent to Transitional Agriculture (AT-35).

This project proposes to develop a 2.25 Megawatt (MW) solar array co-located with agricultural research on up to 15-acres of the Kegonsa Research Campus. The solar array would be set back from Schneider Drive by approximately 800 feet on land currently leased to an outside farmer for agricultural crop production. The northern portion and other areas of the property not included in this development would continue to have agriculture crops in the near term. The design team is in the process of determining the best use of land beneath the solar array that would combine opportunities for agricultural research to be co-located with the new solar array. The project will include an extended electrical distribution line to be located underground to a connection point on a three-phase power pole owned by the UW at the corner of Schneider Drive and Dyreson Road. A new three-phase electrical line and fiber optics line to an interconnection point along US Highway 51 is incidental to this project and paid for by Alliant Energy. Figures for the project are in Appendix C.

The customer-hosted, tariff-based solar facility will be owned and operated by Alliant Energy on land leased from UW-Madison on behalf of the Board of Regents of the University of Wisconsin System.

The project budget is estimated at approximately $2.1 million (based on the estimates from Solar Energy Industry Association [SEIA] 2021 data for the cost of building solar power systems, before accounting for any solar tax credits), funded by Alliant Energy. Alliant Energy and UW-Madison will have a lease agreement to use the site. The lease payments will vary since UW-Madison is also taking the Renewable Energy Credits (RECs) available for the project, which is based on the power the project will create and will offset the lease payments. The value of RECs is market-based. As of January 2022, the RECs were priced at $4.08 per one REC (equal to 1 megawatt-hour [MWHr] of energy generated).

EIA Process

Scoping Letter

A Scoping Letter to solicit input on the project's potential environmental impacts was sent to selected parties and agencies on February 10, 2022. A copy of the Scoping Letter and distribution list of recipients is included in Appendix A. Comments were solicited, and one comment was received from the Town of Dunn staff as of February 21, 2022. This written comment from the Scoping Letter solicitation is also included in Appendix A. The project distribution list for the Scoping Letter is generally the same list used for this Draft EIA document.

Draft EIA

The Draft EIA is being made available on March 10, 2022, for a 15-day public review period. Public legal notices were posted in the *Wisconsin State Journal* and in *Stoughton Courier Hub* on March 10, 2022, to present the draft findings of the EIA and request public input before finalizing the EIA. Copies of this Draft EIA were made available at the E.D. Locke Public Library (McFarland) and Stoughton Public) Library and online at:

https://bit.ly/AyresKRC

Comments on the Draft EIA report must be submitted no later than March 24, 2022, for consideration and incorporation into the Final EIA document and in support of Board of Regent consideration on this proposed project at their April 8, 2022, meeting. Comments can be submitted in writing at the public meeting, verbalized during the public meeting, or sent to the address below:

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Draft EIA Public Meeting

A Draft EIA virtual public meeting will be held at 7:00 p.m. on Thursday, March 24, 2022, https://meet.goto.com/993862389 or via phone by dialing +1 (408) 650-3123 followed by access code 993-862-389. The meeting will be open to the public. Comments will be solicited at the meeting and can be received until the end of the 15-day comment period on March 24, 2022. The design and stakeholder team will consider the information provided during the meeting along with public comments received, use this to identify and study further areas of impact that may need further data, or use this in their design preparation, and incorporate revisions into the Final EIA report. Refer to Appendix B for the Draft EIA Public Notice.

I. Description of Proposed Action

A. Title of Proposed Project

UW-Madison Kegonsa Research Campus Solar and Agricultural Research Project

B. Project Location

UW Kegonsa Research Campus: 3725 Schneider Drive, Town of Dunn

County: Dane

C. Project

Project Description

The proposed project site is located on UW Board of Regents-owned property and managed by UW-Madison, referred to as KRC, located near 3725 Schneider Drive, west of Highway Hwy 51 and Lake Kegonsa between McFarland and Stoughton. The overall KRC site includes the PSL, a research and development laboratory that specializes in the design, engineering, and construction of equipment used all over the world, as well as several other university research buildings and uses. This research campus is part of approximately 280-acres of UW-owned properties along Schneider Drive that is leased for agriculture use. The proposed project site is zoned FP-35 and AT-35.

This project proposes to develop a 2.25 MW solar array co-located with agricultural research on up to 15-acres of the Kegonsa Research Campus. The solar array (approximate location and style shown in Figures 1 and 2 Appendix C) would be set back from Schneider Drive on land currently used for agricultural crop production. The northern portion and other areas of the property not included in this development would continue to have agriculture crops in the near term. The design team is in the process of determining the best use of land beneath the solar array that would combine opportunities for agricultural research to be co-located with the new solar array.

The project will include an extended electrical distribution line to run underground in the right-of-way of the UW-owned overhead 3 phase distribution north on Dryerson to then join and be run underground in the Alliant 3-phase overhead distribution on CTH B. Road crossings for the distribution line are expected to be bored or directionally drilled beneath the roads to minimize disturbance and closures. A new three-phase electrical line and fiber line to an interconnection point along US Highway 51 is incidental to this work paid for by Alliant Energy only if the project occurs. These new lines may be installed both underground or hung on existing transmission poles, but design has not yet been performed on these items of work.

The customer-hosted (as defined by Alliant Energy's Customer Hosted Renewables program: https://www.alliantenergy.com/cleanenergy/whatyoucando/customerhostedrenewables), tariff-based solar facility will be owned and operated by Alliant Energy on land leased from UW-Madison on behalf of the Board of Regents of the University of Wisconsin System. By definition of the program, these systems have a capacity of 200 kW to 2.25 MW of generation capacity and are located on the customer's building or property.

The layout of the agrivoltaic array that will support the photovoltaic (PV) panels will consist of 30 rows at approximately 410 feet linear distance per row. The spacing between the rows may be modified based on the equipment specified, but at this stage of the conceptual design, it is estimated as 16 feet between rows (greater than typical PV systems) to support future crop production and maximized yield through minimized crop shading. Panels will be mounted on hardware systems that will be installed upon I-beam pile foundations spaced to support the structural components of these systems. It is anticipated that these

will be driven approximately 8 to 15 feet below grade. A geotechnical investigation has not yet been performed at the site; thus, number and spacing of pile design has not yet been determined.

The dimensions of the proposed PV panels are approximately 84 inches by 41 inches by 1 inch deep, and the panels themselves will be dual sided to take advantage of ground reflectivity, especially during snow cover. Additionally, the PV panels have an anti-reflective coating to minimize glint or glare, which is also further reduced due to the panel tilt, which is upwards toward the sun. To further support crop growth (yet undefined as to the type or use, at a minimum, pollinator habitat would be specified until research or educational elements of plant growth could be determined), as currently proposed, the bottommost PV panel edge is located at 8 feet above grade to allow for taller crop growth, roaming livestock and/or small farming machinery. The static panels that have no moving parts will be installed at a 25-degree tilt on a 180-degree azimuth and not move or track with the daily sun patterns. Inverter locations and quantities are not yet known at this phase of the design but are likely to be approximately one inverter per row. Electrical and communication piping will generally be below grade.

The site will be separated from the surrounding agricultural farmed areas and the KRC by a 7-foot tall (minimum) deer exclusion fencing that is compliant with National Electrical Safety Code (NESC) Section 11, Rule 110(A) for grounding requirements. This fencing is a required security measure for the electrical generating facility. Future agricultural uses and/or student research at this facility that would be compliant with Alliant Energy and UW-Madison access and safety protocols, yet to be developed, would be allowed. The fencing and locked gate will be the extent of the site security. No site lighting or cameras will be installed for this project, which is typical for a project of this size. Any maintenance activities would be conducted during daylight hours.

Access to the site will be made from a new gravel driveway that would be installed from Schneider Drive south to the northwest corner of the fencing, where it would be extended to a secured entrance gate. This driveway would presumably need to be permitted through the Town of Dunn's driveway permitting process and include associated design details such as material, width, slope, culvert sizing, and other elements to satisfy that process. Little traffic is expected at the site, especially during the winter, since only periodic maintenance and twice a year inspection and cleaning are expected for the array themselves. During growing season, routine crop maintenance may require access within the array areas. Other maintenance and system operation monitoring can be done remotely via wireless connections. Agricultural uses and research elements are not yet known but are likely to generate additional visits for these uses that may be similar to or greater than current agricultural use on this proposed project site.

Purpose and Need

Project Background

The UW Board of Regents own approximately 280-acres of land along both the northern and southern sides of Schneider Drive in the Town of Dunn, approximately ½ mile west of Lake Kegonsa. Most of this land is leased for private agricultural purposes. A 40-acre parcel at 3725 Schneider Drive (south side of the road) contains the KRC and the PSL, as well as a small site on County Highway B to the north. This facility houses a research and development laboratory that specializes in the design, engineering, and construction of equipment. The site contains two main buildings with offices, a fabrication shop, and research areas contained therein. Three large pole sheds on the site are used for storage and additional research area. Additionally, six small storage and maintenance sheds are also housed on this property. The facility employs approximately 45 employees, which has varied in on-site staff during COVID-19 protocols and need to be onsite.

Adjacent to the PSL is the property that is currently leased for private agricultural use by a regional farmer, who has planted and harvested corn or soybeans (rotating crop seasons) for the last 20 years on this site. Currently, no collaborative uses exist along with this private agriculture use with mission-driven research at the UW. This use is consistent with the other UW-owned properties on both the south and north sides of Schneider Drive. Initial efforts have begun on Master Planning this area to understand

future collaborative uses between various departments at the UW and how that may best fit in with the land uses within the Town of Dunn and their approved comprehensive plan. While that process is not the topic of this process or EIA report, it overlays the proposed solar project in that it provides a research opportunity for multiple departments between agriculture and renewable energy, specifically solar, which meet the overall mission of the university in teaching, research, and outreach.

The proposed area (up to 15-acres) that would contain the solar arrays is south-facing and provides the more optimum orientation for maximizing solar energy capture. The northernmost boundary of this area is approximately 800 feet south of Schneider Drive, providing a visual buffer (see figures in Appendix C for location elements and Appendix G for visual impacts of the proposed facility from various vantage points).

Alliant Energy (legally named Wisconsin Power and Light) is a public utility holding company headquartered in Madison, Wisconsin providing power in Iowa and Wisconsin. The Alliant Energy Renewable Energy Partner Program, called Customer Hosted Renewables, would allow for the UW to lease this area to Alliant Energy, who would build, own, and maintain this site. All the energy would be injected onto the Alliant Energy electrical distribution grid, where Alliant Energy would manage the sale of the resulting energy. The University would receive a monthly lease payment that is discounted by the value of the REC's which are established monthly by the power generated from the solar farm in the prior month.

Because the site involves property owned by the UW Board of Regents (and will remain so under the land lease), and economic elements are impacted, WEPA applies to this project. In November 1999, the Board of Regents adopted revisions to the UW System WEPA Guidelines, *Implementation of the Wisconsin Environmental Policy Act within the UW System*. New major construction with potentially significant environmental effects is classified as a Type II action, requiring an EIA to determine if a full EIS is required. This report describes the impacts of this proposed project in compliance with WEPA requirements.

Project Need

The University of Wisconsin-Madison works toward the development and implementation of sustainable practices under the Chancellor's Second Nature Resilience Commitment and the Sustainability Tracking Assessment and Rating System, both of which build from a rich legacy of resource stewardship. This proposed project supports the institution's mission and planning principles by guiding campus development in a way that gives physical form to the university's mission, vision, and programs through the effective use of human, environmental, and financial resources. Creating a solar photovoltaic site for agricultural research and education would promote studies in the co-location of agricultural activities and renewable energy (i.e., "agrivoltaics") by providing research and educational opportunities for UW-Madison faculty and students. Annual lease payments from this proposed project are planned to be reinvested in UW-Madison renewable energy and sustainability initiatives. For more information about campus planning and landscape architecture, please visit the website at https://www.cpla.fpm.wisc.edu/. For more information about UW-Madison's sustainability initiatives, please visit the website at www.sustainability.wisc.edu.

Alliant Energy has developed The Clean Energy Blueprint, announced in 2019, to accelerate their transition to renewable energy. A portion of this Blueprint is increasing the implementation of renewable resources to replace the energy needs of, and allow for the future retirement of, coal-fired generation. Alliant Energy's commitment to sustainability goals include adding 1,100 MW of solar generation in Wisconsin by the end of 2023 and the reduction of carbon dioxide emissions from electricity they produce by 50% by 2030, with net-zero emissions by 2050. This also includes the retirement of coal- or natural-gas-fired generation from Alliant Energy's Edgewater and Columbia facilities by the end of 2024. The goal timeline for complete retirement of coal-fired generation is 2040. To replace this generation capacity, their renewable portfolio needs to continue to grow. While Alliant Energy is on track to provide 50% renewable resources by 2025, additional renewable energy projects need to continue to be added to the portfolio to meet its proposed goals.

The UW-owned site described for this potential project provides an opportunity for development of a portion of this site for agricultural, engineering, and other research opportunities while allowing Alliant Energy to continue to advance its renewable energy goals with the construction of a 2.25 MW solar array. The proximity of the PSL on the site provides an early opportunity to advance goals beneficial for both parties. Programming elements and how this would integrate with academic programs are still being evaluated and discussed through the College of Agricultural and Life Sciences (CALS), College of Engineering (among others educational programs), Office of Sustainability, Office of the Vice-Chancellor of Graduate Research and Education, and Campus Planning and Landscape Architecture at the UW.

D. Estimated Cost and Funding Source

The project budget is estimated at $2.1 million (SEIA 2021 data, which may be escalated with agrivoltaic and interconnection project elements), funded by Alliant Energy. Alliant Energy (aka Wisconsin Power & Light) and the UW Board of Regents will have a lease agreement for the use of the site. The lease payments will vary since UW-Madison will also be utilizing the RECs available for the project, which is based on the power the project will create and will offset the lease payments. The value of RECs is market-based.

E. Project Schedule

The proposed project schedule milestones as of the release of this document are as follows:

EIA, Permitting, Lease Agreement, and Preliminary Design	February to May 2022
Notice to Proceed (Design, Local, State, Federal Permitting and Approvals, begin Interconnection Process)	May 2022
Conditional Use Permitting (CUP) Start	July 2022
Final Permitting, CUP Approvals, Interconnection Agreement, Final Design Approvals	September 2022
Start Construction:	October 2022
Substantial Completion:	April 2023

Note: Individual project components and detailed milestones are being developed and will be contingent upon Board of Regent approvals and other timeline milestones such as Town of Dunn Conditional Use Permit and other permitting approvals which may need to have supplementary information prepared.

II. Existing Environment

A. Physical

Land Use

The project area covers a portion of two 40-acre parcels owned by UW Board of Regents in the town of Dunn, Dane County, WI. The KRC, west of Lake Kegonsa and south of Schneider Drive, occupies approximately 10 acres and includes the UW Physical Sciences Lab. Most of the remaining 65 acres of land is leased agricultural cropland, with portions of lowland/marsh and wooded included in the southern and east-central portions. The project area consists of up to 15-acres of north-south trending portion of the agricultural land. Agricultural use is typically alternating row crops consisting of corn and soybeans. The surrounding area is mixed agricultural and residential with agricultural cropland to the north, west, and east of the project area. A residential development, the Bay View Heights neighborhood, is located on the adjacent parcel to the east.

Beyond the immediate surroundings of the proposed project site, additional agricultural land abuts the site, with approximately twelve homes on half- to one-acre lots along Schneider Drive to the north, and Lake Kegonsa and US Highway 51 to the east. Lake Kegonsa is surrounded by lakefront residential lots, and US Highway 51 connects Madison and the nearby City of Stoughton. The agricultural land consists of parcels that were originally forty acres and are now slightly smaller because smaller lots for farmhouses have been divided off.

Other than the Bay View Heights neighborhood, the surrounding land is zoned for Transitional Agriculture, Farmland Preservation, and large lot (sixteen-acre) residential lots. In the Town of Dunn's Comprehensive Plan, which was updated in 2019, the future surrounding land uses are expected to remain agricultural as they are designated for farmland preservation. However, the UW Kegonsa Research Campus and Bay View Heights neighborhood are in a Limited-Service Area, which means that sewer system access is available and that some lot split may be developed. However, the existing land uses make future lot splits unlikely.

The subject parcel is zoned General Farmland Preservation (FP-35), the primary district for farmland preservation. In contrast, some of the surrounding land is zoned for Transitional Agriculture. The General Farmland Preservation districts allow for Conditional Use Permit (CUP) to potentially be obtained for "Transportation, communication, pipeline, electric transmission, utility, or drainage uses not required by law." In Dane County Townships, CUPs must be approved by the local jurisdictions, in this case, the Town of Dunn and Dane County, and applies to this proposed project. See Figure 11 – Zoning in Appendix C for details.

No accommodations for "electric generating facilities" are made in the Town of Dunn Comprehensive plan. The Town is in the process of developing a new ordinance for regulating solar panels. The draft ordinance supports the use of solar energy while suggesting several regulations. First, the draft ordinance would require a solar license to be obtained from the Town of Dunn. The solar license would need to be reviewed by the Town Clerk and approved by the Town's Plan Commission. The license would require a site plan and developer agreement.

The draft criteria being developed by the Town of Dunn to evaluate a solar production facility application (like that being proposed here) is noted below. This EIA report discusses most or all these items, though all permitting and local, state or federal approval is an independent process conducted by the project owner or developer.

Noted elements of the draft solar ordinance include:

- Whether the System will be appropriately buffered and screened from public view.

- If the System is located outside of the Town's Limited-Service Area, whether the System will sit on fewer than 5 or more total acres of Group I or Group II soils as defined by the Land Evaluation and Site Assessment (LESA) from the United States Department of Agriculture (USDA) and depicted on the Agricultural Land Evaluation map of the Town of Dunn Comprehensive Plan.
- Whether the System and supporting infrastructure meets the siting standards of the Town of Dunn Comprehensive Plan.
- Whether the construction and operation of the System will avoid adverse impacts to town roads.
- Whether the effect of operations at the site, particularly construction activities, will refrain from causing excessive light to be shed from the site onto the neighboring property or adversely impact the use and enjoyment of neighboring property.
- Whether night lighting will be limited to the level that is minimally necessary for security and worker safety.
- Whether the operator will control off-site noise levels to the extent practicable to avoid adverse impacts on neighboring properties, particularly during construction activities.
- Whether any hazardous chemicals or other materials will be absent from the site or be stored, used, and disposed of in accordance with applicable state and federal law.
- Whether negative impacts on environmental, wildlife habitat, architectural, archeological, cultural, or other resources be avoided.
- Whether plant pollinator-friendly vegetation is to be used as ground cover throughout the area covered by the System.
- Whether the System will avoid areas used for crop production or the large-scale removal of topsoil, mature trees, and woodlands.
- Whether utility wires associated with the System will be located underground, including wires that transfer electricity from the System to another location.

The criteria that would have to be met for approval would include:

- The system being necessary to preserve or protect public health or safety;
- That it does not significantly increase the cost of the system or significantly decrease its efficiency; or
- That allows for an alternative system of comparable cost and efficiency.

All System installations would be required to:

- Have a post-construction vegetative ground cover to allow storm water infiltration;
- Comply with local, state, and federal environmental requirements, including storm water management; and
- Be accompanied by adequate security and other legal assurances that financial resources are available to ensure removal of the solar field and all associated equipment and infrastructure when their usefulness or lifespan is exhausted, other technologies render the facilities obsolete or no longer cost-effective, or the owner or operator goes out of business or is otherwise financially unable to maintain the facility or remove the equipment or infrastructure following use.

Soils and Topography

Soils in the proposed project area were reviewed using the USDA Web Soil Survey, which provides soil data and information produced by the National Cooperative Soil Survey. Information presented herein includes Soil Types, Farmland Classifications and Suitability's and Limitations for Solar Arrays with Soil-based Anchor Systems. Individual maps and datasets are included in Appendix C. The portion of the project area where the solar arrays are planned includes three soil types. The three soil types are described below:

- Batavia silt loam (BbB) is present in the southern/southeast portion of the project area and is comprised of a gravelly substratum with 2 to 6 percent slopes. The soil is well-drained when thoroughly wet. The Farmland Classification indicates that all areas with this soil type are prime farmland. The Soil-based Anchor Systems for Solar Arrays rating for this soil type is "very limited," indicating that this soil has the least similarity to a known good site.

- McHenry silt loam (MdC2) with 6 to 12 percent slopes, eroded, is present in the central portion of the project area where the majority of the solar arrays would be installed. The Farmland Classification indicates this is farmland of statewide importance. The Soil-based Anchor Systems for Solar Arrays rating for this soil type is "somewhat limited," indicating that this soil has some similarity to a known good site.

- St. Charles silt loam (ScB) with 2 to 6 percent slopes is present in the northern portion of the project area. The Farmland Classification indicates that all areas with this soil type are prime farmland. The Soil-based Anchor Systems for Solar Arrays rating for this soil type is "very limited," indicating that this soil has the least similarity to a known good site.

The total USDA-classified "Prime Farmland" type soils total approximately 3.5 acres of the proposed project site (Figure 7B Appendix C). This is less than the threshold noted above for the draft solar ordinance for the Town of Dunn ("…[located] on fewer than 5 or more total acres of Group I or Group II soils as defined by the LESA from the USDA and depicted on the Agricultural Land Evaluation map of the Town of Dunn Comprehensive Plan.").

The topography is generally flat with a southward slope from Schneider Drive to the start of the project area (~920 feet above mean sea level (ft. MSL) to 914 ft. MSL). From north to south in the project area, topography slopes south, ranging from ~914 ft MSL to ~778 ft. MSL. The majority of the southward draining topography in the project area is less than 12% slope; however, within the project area, there is a total of approximately 1,185 square feet of 12% to 20% slopes, located on the western side. There are no slopes greater than 20%, thus per Town of Dunn Land Division Ordinance #12-3, no portion of the site is excluded or considered unsuitable for development. The high point of the project area is ~915 ft. MSL and the low point is ~774 ft. MSL. This southward sloping topography drains to an unnamed stream (~850 ft. MSL) south of the project area that flows east as a tributary into Lake Kegonsa. Regional topography shows higher elevations to the west and east of the Madison-area chain of lakes system resulting in drainage patterns to the chain of lakes that trend northwest/southeast. A local highpoint of 928 feet above mean sea level (msl) is mapped just east of the project area south of the KRC campus. For existing site conditions, refer to Figure 3 in Appendix C.

Utilities

Municipal water services are not supplied to the KRC. The water supply for the KRC is derived from two private on-site wells. Additional information regarding the on-site private wells can be found in the Surface and Groundwater section below. The KRC is connected to the Kegonsa Sanitary District, and the PSL has a solids settling tank prior to the ejector pumps that are maintained by the sewer district. Natural gas is supplied to the site via service line from Schneider Drive.

Stormwater

Stormwater runoff from paved areas and buildings on the KRC or PSL flows to adjacent greenspace areas or cropland and is allowed to infiltrate naturally. Stormwater from the proposed solar project site that is currently cropland sheet flows along with the natural topography (see Figure 3, Appendix C), generally north to south, with drainage swales located along the east and west sides of the south. The site and swales all flow to the mapped wetland to the south of the proposed project site.

Electrical Service

Primary electrical service is supplied from an Alliant Energy meter at Hwy B. UW-owned three-phase power lines extend from the Hwy B meter south along Dyreson Road, then west along Schneider Drive before entering the KRC.

Surface Water and Groundwater

Lake Kegonsa is the southernmost lake in the chain of lakes that starts in Madison, Wisconsin, following the Yahara River. Lake Kegonsa has a surface area of 3,200 acres with a maximum depth of 32 feet. Lake Kegonsa is located approximately 2,900 feet east of the project area. Surface water elevation is maintained between 843 and 843.5 feet msl by the Kegonsa dam.

According to local water-table maps, the water table at the project area is present approximately 860 ft. msl, or 70 ft below ground surface (bgs). Well construction log from a well installed at the KRC in 2006 indicates groundwater observed at 59 feet bgs in limestone. Wells in the area appear to be screened in the sandstone aquifer below limestone at depths typically greater than 100 feet bgs. Groundwater levels are expected to fluctuate seasonally as variances in precipitation, infiltration, and evapotranspiration rates affect the amount of recharge to an aquifer.

Groundwater in the project area is expected to flow south/southeast towards the unnamed stream and Lake Kegonsa.

Wetlands and Flood Plains

The Wisconsin Department of Natural Resources' (WDNR) Surface Water Data Viewer provides web-mapping tools for surface water and wetland resources within the state. A wetlands map was generated for the general vicinity of the site. The results of the web mapping indicate there are no mapped wetlands within the project area. South of the project area, there appear to be wetlands around the unnamed tributary to Lake Kegonsa. Once the growing season is established, the map will be field verified to confirm that the wetlands do not extend beyond what has been mapped. The Town of Dunn requires development to occur beyond a 100-foot setback from wetlands with an area of 2 acres or greater, measured from the WDNR wetland Inventory (where site wetland delineation is not available). Based on the mapped wetland boundaries and project area, the nearest wetlands to the project area are greater than 150 feet. East of the project area, there appears to be a drainage ditch that also flows southward to the wetlands and unnamed stream. This ditch likely acts as a springtime/rain event drainage and is not a flowing stream and is not navigable as identified by the WDNR, thus not subject to the 75 feet setback from the ordinary high-water mark as required by Town Ordinance. The Town of Dunn requires development to occur beyond a 25-foot setback from drainage ways that contain running water during spring runoff or storm events. See Figure 6 in Appendix C for applicable setback buffers around the project area. Setback requirements for the Town of Dunn are established in the Land Division Ordinance #12-3.

The online Federal Emergency Management Agency (FEMA) Flood Map Service Center was utilized to generate a local map to review flooding potential for the project area. The map indicates that the project site is located within an area of minimal flood hazard. The project can be further defined as within Zone X. FEMA defines Zone X as an area outside the 500-year floods, which means it has less than a 0.2%

chance to flood annually. Refer to Figure 4, Appendix C for the floodplain map that encompasses the project site.

Air Quality

Chapter NR (Natural Resources) 400 of the Wisconsin Administrative Code regulates air pollution. This chapter regulates the “criteria pollutants”: particulate matter, sulfur dioxide, organic compounds, nitrous oxides, carbon monoxide, and lead. As of July 10, 2020, Dane County is attaining the National Ambient Air Quality Standards (NAAQS).

Dane County’s air quality index (48 out of 500 on February 7, 2022) is considered “good” or satisfactory, and air pollution poses little or no risk.

Hazardous Materials

The Wisconsin Department of Agriculture, Trade, and Consumer Protection (DATCP) storage tank database, WDNR Bureau for Remediation and Redevelopment Tracking System (BRRTS), and Environmental Protection Agency (EPA) Envirofacts website were searched for potential environmental hazards within the project area (Appendix F).

There were no registered storage tanks within the vicinity of the project site or adjoining properties.

Two sites were noted in WDNR’s BRRTS database but appeared to be from the same incident.

- BRRTS#04-13-250518 BARN (SPILL) – This activity opened in 1999 when a spill incident was reported via notification of a hazardous substance spill to the department. Notes for the site indicate an “old transformer” was involved and mineral oil in the amount of 25 gallons released. Absorbent was used as a cleanup method in combination with soil excavation.
- The Spill site was closed in 2000 and transferred to an Environmental Repair Program (ERP) site (BRRTS#02-13-245151 UW PHYSICAL SCIENCES LAB) which subsequently closed in 2001. Limited documentation exists; however, it does not seem likely that the spill site occurred in the project area where no utilities currently exist. It is likely that the spill occurred on the KRC campus, and the potential for impacts to the project area is minimal.

The EPA’s Envirofacts website was searched for Superfund Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) sites and generators or handlers of hazardous waste. Superfund sites were not identified within an approximate 0.5-mile radius of the project area. The “UW-Madison Physical Sciences Lab” was identified as having a Handler ID (WID988625406), indicating the facility manages hazardous waste. A review of the WDNR Solid and Hazardous Waste Information System (SHWIMS) on the Web revealed the facility is listed as a hazardous waste generator under the “very small” category.

Structures

The proposed array site is southwest of existing structures at the KRC. Currently, there are no structures on the array site.

The adjoining KRC site on Schneider Drive has two main buildings with offices, shops, and research areas. Separate from these buildings are three large pole sheds used for storage and research. Additionally, six small storage/maintenance sheds are located on the campus. One other building houses the groundwater supply wells, storage tank, and associated controls. These structures are locked and have site security lighting surrounding them, with some areas of this campus maintaining site access fencing and gates.

Noise

Currently, there are no permanent non-natural noise sources on the project site. Temporary noise sources at the site include agricultural equipment used to cultivate crops. Agricultural noises occur seasonally and in relatively short durations. Other noise sources near the project area include traffic on Schneider Drive and Greene Road and pedestrian and mechanical noise from the adjacent UW Kegonsa Research Campus.

B. Biological Environment

Existing Landscape

The project site is developed agricultural cropland that resides within Wisconsin's Southeast Glacial Plains Ecological Landscape. This region is characterized by glacial till plains and sediments deposited by the Wisconsin glaciation. These nutrient-rich deposits, coupled with a suitable growing climate, created productive croplands. According to the Wisconsin Ecological Landscape Handbook, approximately 58% of this ecoregion agricultural cropland, 11% is forested, and 12% is a wetland.

Endangered Resources Review

Alliant Energy submitted an Endangered Resources Review (ERR) request (Form 1700-079, R 1/20) to the WDNR for information on threatened, endangered, and special concern species that may potentially be in the general area of the project or may be impacted by the project. The WDNR completed its review on January 31, 2022, identifying seven endangered resources in the surrounding area and potentially at the project site. These resources include five plant species/communities and two animals. Correspondence from the WDNR and the ERR Verification Form is confidential and is attached to this report in its redacted form in Appendix E. The specific names of these endangered resources are kept confidential for their protection. Additional information about endangered resources within the project area can be requested from WDNR's ERR Program, 101 S. Webster Street, PO Box 7921, Madison, Wisconsin, 53707.

Flora

The ERR determined the project would have no to low impact on two of the plant species/communities due to the lack of suitable habitat within the project boundary. However, the project could impact three other plant species/communities identified in the ERR. WDNR recommended the following actions to conserve resources:

- Surveys to confirm the presence or absence of species. The survey results should be submitted to the ERR Program.
- Fence off areas of occupied habitat.
- The installation of erosion controls during construction

Fauna

According to the ERR, one animal species identified will not be impacted because of a lake of suitable habitat near the project site. The project could impact the other animal species identified in the ERR. WDNR recommended incorporating the following actions into project plans:

- Avoid work in suitable habitats during the species nesting period using controls such as installing and maintaining exclusion fencing.
- If avoidance dates or fencing cannot be implemented, walk through or gently disturb the project area immediately before disturbance.

- Wildlife-friendly fencing in the south portion of the project sites

C. Social and Cultural Environment

Existing social aspects of the area are presented as context to the project. The social profile, potential beneficiaries, or parties impacted by the project are also detailed below.

Town of Dunn and Dane County

Table 1 provides population data for Dane County and the Town of Dunn. Between 2010 and 2020, the most recent period for which complete U.S. Census Bureau data are available, Dane County has seen a rise of 13% over approximately ten years. However, the Town of Dunn has seen a decrease in population of just under 1%. According to the Town of Dunn Comprehensive Plan, the Town has seen a declining population since 2000. This is likely due to the Town's limited growth policies and changing demographics.

Table 1: Population Data for Dane County, Town of Dunn

	Census 2010	Estimate 2021	Numeric Change	Percent Change 2010-2021
Dane County	488,073	551,989	63,916	13.10%
Town of Dunn	4,931	4,880	-51	-1.03%
Wisconsin	5,686,986	5,893,718	206,732	3.6%

Source: U.S. Wisconsin Department of Administration and U.S. Census

According to the Wisconsin Department of Administration (DOA) Demographic Service Center, Dane County is projected to be the sixth fastest-growing county in Wisconsin, with a projected population increase from 2010 to 2040 of 24.3%. The Town of Dunn is expected to continue to see a population decline with a -8.23% change from 2010 to 2040

UW-Madison Kegonsa Research Campus

University of Wisconsin System consists of 13 campuses across the state of Wisconsin. UW-Madison, founded in 1848, which stretches across 938 acres in downtown Madison, is the flagship campus. Located approximately 14 miles from the main campus, the UW Kegonsa Research Campus is part of UW-Madison. The campus consists of two buildings that contain offices and shop/research areas. There are also three large sheds and six small sheds on the property. Driveways and parking areas traverse the campus and allow access to a secured ropes course area south of the PSL facility. The facility is served by the Kegonsa Sanitary District, but it operates on two wells rather than a municipal water supply. The facility is surrounded by cropland.

When it first opened, the campus was home to the Synchrotron Radiation Center (SRC). That closed in 2014 due to funding challenges, and the space is now solely used by the University of Wisconsin–Madison's Physical Sciences Laboratory, or PSL. The PSL is a research and development laboratory that provides a range of services, including consulting, design, fabrication, and calibration services in scientific instrumentation. The facility includes state-of-the-art machinery and electronics shops. The PSL offers a staff trained in electrical engineering, mechanical engineering, and physics to address the unique needs of research projects of every scale and complexity. Approximately 45 people are employed at PSL.

Adjacent parcels to the Kegonsa campus include a house and associated cropland that is owned by the University of Wisconsin and leased.

Employment

Table 2 provides employment data for residents of Dane County, Wisconsin, and the United States in 2021 compared to employment and income data for the area surrounding the subject site. Because the site is located in the Town of Dunn, which is primarily agricultural and has a population of under 5,000, detailed employment and income data is not available at the township level. Instead, data for the nearby city of Stoughton was used.

Table 2: Employment Data

Location	Civilian Labor Force	Number Employed	Number Unemployed	Unemployment Rate (%)
City of Stoughton	9,326	7,054	326	3.5
Dane County	319,433	304,154	15,279	4.8
Wisconsin	3,104,354	2,982,792	121,562	3.9
United States	161,766,000	153,680,000	7,674,000	4.8

Source: Local Area Unemployment Statistics (LAUS) 2020 to 2021 and U.S Census Bureau QuickFacts from 2019

Income

According to the US. Census the median household income in the Town of Dunn is $86,806. This is substantially higher than the Dane County median household income of $62,303.

Neighborhoods

As described in the land use section, the subject site is surrounded by farms except for approximately 12 homes on half acres lots along Schneider Drive and the Bay View Heights neighborhood, which consists of 222 mobile homes. The western edge of the neighborhood would be approximately 600’ away from the proposed solar array. The Bay View Heights neighborhood was established in 1968 and is an affordable housing option in Dane County. Lots rent for under $400 per month. The neighborhood is accessed from County Highway B/State Highway 51 and consists of a series of curvilinear streets. Across County Highway B/State Highway 51 from this neighborhood to the east are other area homes lining Lake Kegonsa.

Important Social Features and Buildings Near the Project Site

The primary building near the site is UW Lake Kegonsa Campus, discussed earlier in the report.

D. Economic Environment

As mentioned, the Town of Dunn is a rural community. However, it sits in a metropolitan region anchored by Madison, Wisconsin. The City of Stoughton is approximately 3.5 miles southeast of the subject site. Many communities in the Madison area have seen substantial growth over the last twenty years, fueled by the presence of the University of Wisconsin, the state government, and major employers such as Epic

Systems, American Family Insurance, and Exact Sciences, with all continuing to grow today and projected to have strong growth in the future. The Town of Dunn has embraced land-use policies limiting lot divisions with a focus on keeping their community rural. According to the Town of Dunn Comprehensive Plan, the population of the Town of Dunn is projected to continue to decline while surrounding jurisdictions grow.

Sixty-five percent (65.5%) of the workers in the Town of Dunn are employees of private companies, and the average commute time is approximately 24 minutes. There is little existing commercial or office development in the Town of Dunn, indicating that most people in the workforce in the Town of Dunn live there but commute to jobs in nearby communities. As noted earlier, the median family income in the Town of Dunn is high at $86,806. The poverty rate is 5.2% which is just over half that of the rate in Dane County, 9.4%.

The UW Kegonsa Research Campus, with approximately 45 employees, is likely one of the largest employment locations in the Town of Dunn. New work-from-home policies have reduced on-site staff to those using the facilities or office space compared to historic facility operations, but many are returning today as the pandemic eases and face covering restrictions are lifted. The University of Wisconsin-Madison has a significant impact on the local and State economy. UW-Madison had 23,917 budgeted faculty and staff positions in Fall 2019. Faculty had an average salary of $104,900 in 2016 (Budget in Brief, 2016). UW-Madison, along with affiliated organizations and connected startup companies, contributes $30 billion per year to Wisconsin while supporting 189,202 Wisconsin jobs and generating $718 million in state tax revenue (NorthStar Economics, 2020).

E. Archaeological and Historical Environments

Ayres reviewed the Wisconsin Historic Preservation Database (WHPD) on February 8, 2022, for known archaeological and historical sites at and in the vicinity of the proposed project site. This database includes information from the Archaeological Report Inventory (ARI), Archaeological Sites Inventory (ASI), Architecture and History Inventory (AHI), and the National Register of Historic Places (NR).

No sites of archaeological or historical significance were noted within the proposed project's limits of disturbance on the WHPD. Similarly, no sites were noted within the likely corridor for transmission line connection to be constructed as a separate but directly related project with possible cumulative impacts.

Several sites are located near the project location on the WHPD, including on or adjacent to UW-owned property, which is contiguous with the proposed project site. However, the greatest density of sites is adjacent to the shores of Lake Kegonsa, approximately 0.6 miles to the east. The sites in the closest proximity to the UW-owned property are described in the table below.

Database / #	**Location / Distance**	**Summary**
ASI #12186 (DA-0298)	E ½ of SE ¼ of S27, T6, R10E; 0.25 mi	The Halverson site adjoins UW-owned property to the south and is outside of project limits. It is noted to have grooved axes and other lithic artifacts associated with a Ho-Chunk camp circa the 1860s. The current status of the site is unknown.
AHI # 4676	2055 Green Rd; W side of Green Rd, 0.2 mi S of Schneider Dr.; 0.3 mi	The Amanda and Asher Green House adjoins UW-owned property to the west and is outside of project limits. The house is of Gabled Ell style, and it was surveyed in 1977. However, no eligibility determination is available. The site is not listed on the NR.

ARI # 45732 (WHS # 06-0207)	S26, T6, R10E; 0.3 mi	This site is located to the southeast, just south of a mobile home park. No cultural materials or features were identified during a Phase I Archaeological Survey, including 40 shovel tests. No further field work was recommended.
ASI # 78327 (DA-1387)	0.3 mi; 25 meters south of CTH B and 3200 meters west of USH 51	This site measures 25 square meters and consists of an isolated find of a chert biface on UW-owned property. The previous investigation suggested a loss of archaeological integrity.
ASI # 12659 (DA-0729)	SE ¼ of NW ¼ of S27, T6, R10E; 0.35 mi	The Green Mound Group site adjoins UW-owned property to the southwest and is outside of project limits. It consists of a group of burial mounds that have been destroyed by cultivation.
ASI # 9849 (DA-0106)	NW ¼ of S26, T6, R10E; 0.4 mi	This site is at Barber hill, 200 to 300 meters west of Lake Kegonsa, and was originally reported to contain three linear and seven conical mounds. The Final Report of the Dane County Indian Mounds Identification Project notes that all of the at least 49 mounds once present at this site have been destroyed by cultivation and development. Shovel testing in the east portion in 2011 revealed a lithic scatter but no evidence of mounds. In 2021, Phase II investigations were completed within the proposed USH 51 corridor, and no surficial mounds were identified. Twenty-three square meters were excavated and confirmed woodland components were at the site, but the material lacked vertical integrity, and woodland artifacts were intermixed with post-contact debris. No further investigation was recommended.
AHI # 4671	3865 Schneider Dr; 0.1 mi E of Green Rd; 0.45 mi	The J. Penwell Jr. House is located to the northwest of UW-owned property and is outside of project limits. The house is of Gabled Ell style, and it was surveyed in 1977. However, no eligibility determination is available. The site is not listed on the NR.
ARI # 53239 (WHS # 16-0413)	S22, T6, R10E; 0.5 mi	This site is located just north of UW-owned property, and Schneider Dr. A Phase I Archaeological Survey was conducted in 2016 for an irrigation pipeline and pumping plant project. No cultural materials were found.
AHI # 158641	3735 CTH B; 0.7 mi	This site is located on UW-owned property associated with the proposed project site but is outside of project limits. A utilitarian building constructed at this location in 1965 was deemed Not Eligible after evaluation in 2010 and 2019.
ARI # 50028 (WHS # 060048)	S22 & S23, T6, R10E, et al.; 0.75+ mi	This Wisconsin Historical Society (WHS) project is comprised of numerous ARI sites evaluated during a Phase I Archaeological Survey for multiple corridors and planning alternatives for USH 151, totaling 1,424 acres. Sites investigated include DA-0080, DA-0087, DA-105, DA-106, DA-107, DA-108, DA-0328, DA-0480, DA-0556, DA-0567, and DA-0569. Phase II testing was recommended at nine sites, including mound groups DA-0480 and DA-0106. However, these sites are located approximately a

		quarter mile or greater from the project site and are in close proximity to Lake Kegonsa.

Refer to Figure 9 of Appendix C for a figure depicting the locations of the sites in relation to the proposed project site. Copies of WHPD records are maintained on file with Ayres Associates and UW-Madison and available publicly through the Wisconsin Historical Society hosted database terminal.

F. Parking and Transportation

There are no roads, parking lots, bus stops, or other transportation-related infrastructure at the project site. The nearest road is Schneider Drive, approximately 800 feet to the north. There are no access roads from Schneider Drive to the project site. Driveways and parking lots for the adjoining KRC are not within the project site.

III. Proposed Environmental Change

The proposed 2.25 MW solar array would occupy up to 15-acres of UW-owned property to the southwest of the KRC. The array will be constructed using agrivoltaic principles to allow dual use of the space for power generation and agriculture. The design concepts and descriptions of the proposed system as currently envisioned are described in Section I. C. above.

A. Manipulation of Terrestrial Resources

Terrestrial resources deal with changes that will occur and land surfaces as opposed to water or air resources.

Surface and Subsurface Manipulation

Over the course of the proposed solar array project, up to 15 acres of land is expected to be disturbed. The project will incorporate an array of solar panels with the ability for continued agricultural use and research at the site.

Subsurface Manipulation

Subsurface disturbance for the project includes the installation of driven pile foundations for the solar panel mounts, installing fence poles, installing electrical collector lines within the array area, installing a subsurface power distribution line, and installing a fiberoptic communication line. The exact route of the subsurface power distribution line has not yet been determined. However, it will tie into 3-phase power from an existing distribution point off Dyreson Road, which is further to the northeast. The preliminary distribution and fiberoptic line route concepts supporting the proposed solar array are shown in Figure 12, Appendix C.

Surface Manipulations

The at-grade landscape will be occupied by solar panels, mounts, transformers, power inverters, and agricultural crops. It is anticipated that minimal grading will be required to prepare the site for construction, and the agrivoltaic design will optimize the balance of crop yield and power generation. Spacing between the panel rows and their height above the ground will allow planting and harvesting of crops. A gravel driveway will provide access to the site from Schneider Road, and the site will be fenced to prevent unauthorized access and protection from wildlife.

B. Manipulation of Aquatic Resources

Before project construction, a Wisconsin Pollutant Discharge Elimination System (WPDES) permit for stormwater associated with land-disturbing construction activity should be obtained from the Wisconsin Department of Natural Resources, coordinated through Facilities Planning & Management at UW-Madison who officially represents the Board of Regents as the landowner. This permit is required for land disturbance activities over one acre.

No streams, wetlands, or other aquatic resources are anticipated to be disturbed by the project. Setbacks for the Town of Dunn ordinances are 100 feet to wetlands mapped through DNR's data viewer and 75 feet from navigable streams. These setbacks appear to be met but are adjacent to the project limits and will be part of a separate permitting process incorporated by the development team that may include on-site wetland delineation or other confirmation of this information.

C. Structures

Preliminary designs for the array include an estimated 30 rows of panels with 16 foot spacing between rows. Structural I-beams are anticipated to be driven 8 to 12 feet below grade to support the mounting of the solar panels and inverters. Each row will be approximately 410 feet long. Each panel is 83.9" x 41.3" x 1.2" and will be mounted, so its bottommost edge is approximately 8 feet off the ground allowing for combined agricultural use. Based on the relatively flat topography of the site, each panel will be mounted at a fixed 25-degree angle with a 180-degree azimuth. The proposed panels are static and will not move once mounted. Other structures at the site will include power inverters, the quantity of which will depend on the design of the converters used, which will be determined at a later date. These may number as high as 38 if 60 kW inverters are used, or as few as 18 if 125 kW inverters are selected.

D. Other

Asbestos and Hazardous Materials

Construction of the solar array will include an on-site transformer that is expected to hold 521 gallons of oil. To comply with the U.S. EPA guidelines and satisfy the requirements of 40 CFR Part 112 *Oil Pollution Prevention and Response; Non-Transportation-Related Onshore and Offshore Facilities,* a Spill Prevention Control Countermeasure (SPCC) plan is required where there is a cumulative aboveground storage capacity of 1,320 or more gallons of oil products. Given that the volume of oil in the transformer is below the 1,320-gallon threshold, no SPCC plan will be written for the site.

Archaeological and Historical

The proposed project, including the installation of the agrivoltaic array and associated interconnection distribution line corridor, will not adversely impact any historical buildings known to be or eligible for listing on the NR, as all buildings are outside of the limits of disturbance.

No known archaeological sites will be impacted by the proposed project, as all known sites are outside of the limits of disturbance. However, there have been numerous archaeological sites, such as burial mounds, documented near Lake Kegonsa and throughout Dane County. Therefore, there is a low potential for undocumented archaeological sites to be impacted during soil disturbing activities such as grading, excavation, or directional soil boring, and it is appropriate to conditionally implement mitigation measures. If archaeological resources, or potential archaeological resources, are found during excavation (including human remains), all work must immediately stop, and a qualified archaeologist will be retained for a formal investigation before any further work proceeds and the Wisconsin Historical Society be immediately notified for coordination.

Utilities

The site is serviced by two private water supply wells. The KRC is part of the Kegonsa Sanitary District. Stormwater is shed from impervious surfaces and allowed to infiltrate in surrounding greenspace areas naturally. This stormwater control mechanism will continue with the proposed project, and the site will continue to be vegetated through crops grown in conjunction with UW-Madison research endeavors, or at a minimum, with pollinator habitat.

To facilitate the installation of the solar array, Alliant Energy will construct a new underground distribution electric line starting at the northwest corner of the proposed solar array and extending northward to Schneider Drive. While the proposed route has not yet been confirmed, it is believed to pass beneath Schneider Drive and traverse east along the north side of Schneider Drive to Dyreson Road in UW right-of-way. The line would then turn north and follow the UW 3-phase line right-of-way (through new easement agreement) to CTH B, at which point it would split to the east underground along the Alliant Energy 3-phase right-of-way. Alliant Energy, as part of this project, will also install fiber optic cable along the same route. From this intersection, fiber will be installed northwest in the ROW to the Colladay Point Substation on the north side of State Hwy 51. See Figure 12 in Appendix C for further details.

Noise

Permanent ambient noise levels are not expected to be altered by the project except for noise generated by transformers and inverters that will be installed as infrastructure for the solar array; the panels themselves make no audible noise since they are static systems without tracking systems. While current design information or equipment has not yet been specified, noise data can be provided at a later date if needed but is expected to be insignificant to local noise levels.

In 2012, the Massachusetts Clean Energy Center sponsored a study of the measured sound levels from installed solar equipment (J. Malén, *Analysis of noise emissions from solar inverters*, Aalto University School of Science and Technology, 2013). This study, based on photovoltaic arrays from 1,000 to 3,500 kW DC (similar in size to this proposed project), concluded that “any sound from the PV array and transformer/inverter equipment was inaudible at setback distances of 50 to 150 ft from the boundary.”

Short-term noise impacts will occur during the construction period. Major construction elements that will produce elevated noise levels include the use of heavy equipment for grading, deliveries, and excavation. Additionally, some noise impact will occur from the installation of the solar array, most noticeably will be the driven structural I-beam pile installation which will be done during normal business hours and in accordance with Town of Dunn ordinance (*Sec. 17.12 Loud and Unnecessary Noise* that limits work to the hours of 7:00 a.m. and 10:00 p.m. on weekdays and Saturdays). Anticipated noise will most directly impact those living or working near the project, including those working on the KRC and nearby residences. The closest residential structure is approximately 800 feet to the east of the project area along Charles Lane (Bay View Heights neighborhood) and at 3777 Schneider Drive to the north. Farm homes are located over 1,000 feet to the west.

Construction noise is expected to be of short durations with standard hours of operation between 7:00 a.m. and 7:00 p.m. All construction work will comply with the applicable Town of Dunn, Chapter 17-12 Loud and Unnecessary Noise ordinance. For those times when construction is outside the standard work hours of 7:00 a.m. to 7:00 p.m., written approval from the Town of Dunn will be required.

Table 1 lists actual measured operating noise levels of construction equipment at 50 feet.

Table 3 Construction Equipment Noise at 50 Feet.

Equipment Description	Actual Measured Lmax @ 50 feet (dBA, slow) (samples averaged) [1]
Pile Driving [2]	110
Auger Drill Rig	84
Backhoe	78
Compactor	83
Concrete Mixer Truck	79
Dozer	82
Dump Truck	76
Excavator	81
Flat Bed Truck	74
Front End Loader	79
Generator	81
Pickup Truck	75

Sources: [1] U.S. Department of Transportation, Federal Highway Administration

[2] https://www.nrc.gov/docs/ML1225/ML12250A723.pdf

Traffic and Parking

Construction activities may necessitate temporary traffic control during equipment loading and unloading sequences. Upon completion of construction, traffic patterns for pedestrians, bicycles, and vehicles will return to their normal operating conditions. It is anticipated that construction-related traffic will utilize the KRC access road off Schneider Drive and route through the campus to the project area, or alternatively, depending on timing, along the proposed new 15-foot gravel access drive dedicated for the solar array on the west side of the installation, extending south from Schneider Drive.

The traffic control impacts may include temporary lane closures along Schneider Drive near the KRC access drive for equipment deliveries/pickups to and from the site. Construction-related traffic to and from the project area along Schneider Drive during the project may include dump trucks, flat-bed semis, heavy-equipment haulers, utility-installation equipment, and contractor pickup trucks. No major trucking operations are planned. Utility installations as part of the project may result in localized lane closures; however, these impacts will not likely exceed the scope of normal utility installation operations that occur in the right-of-way. It is expected that any road crossing for utility interconnection would be directionally drilled.

The project will not provide additional parking, and the current existing parking spaces at the KRC are not anticipated to be removed or impacted. Access to the ropes course on the south side of the KRC are also not anticipated. Construction staging for a portion of the utility project will likely occur in the agricultural field adjacent to the proposed project site, between the project site and Schneider Drive.

Traffic for operations and maintenance once constructed will be insignificant, with anticipated twice per year cleaning and maintenance by site technicians. On-going maintenance and system operation analysis will be done remotely. Agricultural or research elements for plantings inside the fencing on the project site are not yet known but are likely to be similar to, or possibly greater than, the current large agricultural planting or harvesting that occurs with the existing site conditions. Equipment used for agricultural use would need to be smaller to fit between rows and beneath the panel heights compared to traditional equipment for large fields.

Erosion Control

Surface water runoff from the proposed site work will be controlled during the construction phase. Silt fences and other runoff/siltation devices will be utilized during construction activities per construction best management practices (Wisconsin Administration Code Chapter NR 151 Runoff Management and NR 216 Stormwater Discharge Permits) to minimize environmental impacts of the project. The erosion control plan will comply with local and state standards and will be developed and implemented by the development and construction teams separate from this EIA process.

An erosion control plan has not yet been developed for this project but will be required as part of the construction documents as noted above. The project will likely require a construction tracking pad to reduce the tracking of soil material onto adjoining roads. At a minimum, roads will be cleaned daily to remove accumulated sand, silt, and soil as a result of construction. A communication protocol between neighbors, Town staff, and the construction team is anticipated to be discussed prior to construction so potential issues like this can be addressed and resolved in a timely manner.

Visual

Visual aesthetics in the vicinity of the proposed project will be minimally affected. Though screened by adjacent existing trees and vegetation, installation of the solar array will result in the panels being visible from a distance at select locations along Schneider Drive and Greene Road. A 3-D model of the site and the associated topography and site features was created for the purpose of providing viewshed impacts from various vantage points around the site. These viewpoints give examples of what residents and travelers along the roads can expect to see. The renderings of this model are noted in Appendix G, along with supporting visual markups to show where the panels are located at those vantage points. Based on these renderings, visual impacts are limited to a few areas along Schneider Drive and from homes with clear site lines to the array. Most of the array is screened by existing trees or topography in the area.

Physical site topography will not be significantly changed; only select grading at the project area installation of the solar array is expected. The solar array design encompasses various aspects of agrivoltaics which result in the panels being elevated above ground level approximately 8 to 12 feet.

Glare is not anticipated due to the south-facing array (away from roads), setbacks from roads and homes with existing visual screening that will be left in place, panels designed to absorb and not reflect sunlight, and the anti-glare surface of the PV panels.

IV. Probable Adverse and Beneficial Impacts

A. Physical Impacts

The physical impacts of the project primarily consist of the addition of the solar array to the existing landscape. Currently, the project area consists of agricultural row crops (corn, soybeans, etc.) but will be modified by the addition of solar panels. The physical impact will be dampened, however, by the implementation of agrivoltaic practices. These practices combine growing various crops within the extent of the solar array and below the panels. Various examples and descriptions of agrivoltaics can be found through basic internet searches (see: https://en.wikipedia.org/wiki/Agrivoltaic).

The proposed construction activities will have several physical short-term environmental impacts. However, construction actions (nor possible future decommissioning and system removal) will not threaten water or soil quality nor the underlying geology of the site. Best management practices will be taken to control erosion. Short-term air impacts from construction include emissions from construction associated vehicles. Environmental concerns are not expected to be encountered during soil excavation or utility construction and present little adverse or beneficial impacts to the site.

Long-term adverse impacts will not result from the project development. Possible adverse short-term impacts, though unanticipated, may include short-term interruptions in localized KRC power. Building materials such as concrete and steel will be utilized during project implementation and irretrievably committed to the project.

The proposed action is not expected to increase stormwater runoff quantities or qualities due to the replacement of currently grown crops (corn, soybeans) with other vegetated cover (at a minimum, pollinator habitat).

Short-term noise and inconvenience around the KRC during construction operations are adverse impacts expected from the site development. They are not atypical of any other construction activity like those employed for this proposed project. However, due to the location near existing university buildings, noise impacts may be noticed more in those facilities. Long-term noise impacts are not anticipated as a result of this project. Significant portions of the construction project will be conducted during the summer. The work is expected to be limited to daytime operations. Therefore, evening and night noise issues are not anticipated. However, sequencing of work is at the discretion of the construction contractor, though all work must comply with the Town of Dunn noise ordinance. Other potential noise issues from harvesting of plants grown or grazing animals in the area (if allowed) would be similar to, or less than, the current agricultural harvesting that occurs on this leased land.

In summary, the physical impacts from this project have minimal adverse effects, anticipated to be limited to construction activities. Short-term noise and minor air impacts from construction activities are expected to impact the KRC for the project duration. No other groundwater or soil impacts are expected. Beneficial impacts will be realized in the KRC facilities allowing countless research opportunities while offsetting the energy needs of the facilities.

B. Biological Impacts

The project will alter the existing land use from cropland to a mix of crops and solar energy production. Biological impacts from the proposed addition of a solar array likely include changes to the type of crops produced, temporary disturbance to the native flora and fauna during construction, and minimal tree removal near the southern extent of the site.

Construction of the solar array is anticipated to cause short-term biological impacts. The potential disruption of native flora and fauna will be mitigated through the implementation of the recommended actions in WDNR's ERR response. Surveys to confirm the presence or absence of species will be

completed before construction, and areas of occupied habitat will be fenced off to avoid adverse impacts during construction. Additionally, to the extent possible, work in suitable habitats will be avoided during the species nesting period using controls such as installing and maintaining exclusion fencing. If avoidance dates or fencing cannot be implemented, the areas will be gently disturbed immediately before construction activities to avoid animal take.

Long-term adverse biological impacts are not anticipated as the project site is agriculturally developed, and the proposed activities blend the current site use with solar energy production. Other long-term impacts may include the transition to crops that require harvesting equipment capable of accommodating the spacing between and beneath the solar panels

EXAMPLE Native Grass and Pollinator Seed Mix, Wisconsin

LOW PROFILE PRAIRIE SEED MIX

Botanical Name	Common Name		PLS Ounces/Acre
Permanent Grasses:			
Bouteloua curtipendula	Side Oats Grama		192.00
Schizachyrium scoparium	Little Bluestem		95.00
Sporobolus heterolepis	Prairie Dropseed		16.00
	Total		**303.00**
Temporary Cover:			
Avena sativa	Common Oat		360.00
Lolium multiflorum	Annual Rye		120.00
	Total		**480.00**
Forbs:			
Allium cernuum	Nodding Wild Onion		3.00
Amorpha canescens	Lead Plant		1.00
Aquilegia canadensis	Wild Columbine		2.00
Asclepias tuberosa	Butterfly Milkweed		8.00
Astragalus canadensis	Canadian Milk Vetch		1.00
Baptisia lactea	White Wild Indigo		4.00
Chamaecrista fasciculata	Partridge Pea		16.00
Coreopsis palmata	Prairie Coreopsis		4.00
Dalea candidum	White Prairie Clover		6.00
Dalea purpurea	Purple Prairie Clover		6.00
Echinacea pallida	Pale Purple Coneflower		16.00
Kuhunia eupatoides	False Bone-Set		3.00
Lespedeza capitata	Round-Head Bush Clover		4.00
Liatris aspera	Rough Blazing Star		4.00
Potentilla arguta	Prairie Cinquefoil		0.50
Pycnanthemum virginianum	Common Mountain Mint		0.50
Rudbeckia hirta	Black-Eyed Susan		10.00
Silphium terebinthinaceum	Prairie Dock		2.00
Solidago juncea	Early Goldenrod		0.50
Solidago rigida	Stiff Goldenrod		1.00
Tradescantia ohiensis	Common Spiderwort		5.00
Verbena stricta	Hoary Vervain		3.00
Zizia aurea	Golden Alexanders		5.00
	Total		**49.75**

INSTALL LOW PROFILE PRAIRIE SEED MIX UNDER SOLAR ARRAYS AND WITHIN THE PROPERTY BOUNDARY

Impacts to flora or fauna would be expected to be beneficial compared to the currently rotated crop (soybeans, corn) crop scenario. Adverse impacts to biological components are not expected due to the lack of habitat at the existing site for native or naturalized plants and animals. Federally or state-listed

endangered, threatened, and rare species are unlikely to exist on or be in the vicinity of the proposed project site, and databases were reviewed accordingly as discussed in Section II B.

C. Socioeconomic Impacts

As described earlier, the Town of Dunn has a high median income and low poverty rate. The community has a large area of agricultural land and open space. The primary socio-economic impact of the solar array would be the change in land use from agriculture to utility-related use. While the loss of some farmland can be a concern in itself, often there are concerns that the loss of one parcel of farmland will lead to or facilitate the loss of more land. There can also be a concern that a non-farming use can disrupt adjacent agricultural operations.

It is important to note that the subject parcel is already owned by the University of Wisconsin. While it is farmed, it is not part of a family farm. In addition, the solar array would be south of an existing educational facility and west of a developed neighborhood located in a way to minimize visual and physical impacts to the surrounding land uses. The impacts are then less than a solar array located in a completely agricultural area. It is possible to still cultivate plants under and around a solar array. Low-growing plants such as melons or soybeans can be grown, or prairie or other pollinator habitat planting could be considered.

The second socio-economic impact often associated with solar arrays is the impact on property values. A study by the Solar Energy Industries Association examined the impacts of solar arrays on property values and found no measurable negative results. They found that the presence of solar arrays did not deter the sales of agricultural or residential land, in part because they can be screened with plantings to mitigate visual impacts.

The construction of the solar array will have a positive economic impact. Longer-term, the power generated by the array has a positive socio-economic benefit through the income generation potential of the project for the UW campus and through the use of clean energy. According to the U.S. Energy Information Administration, the construction costs of solar per kilowatt have fallen substantially from 2013 to 2019, while the cost for wind turbines has remained steady, and the cost of natural gas-fired generators has increased almost 29%. In the last year, the Henry Hub Natural Gas Spot Price (a representative indicator of the economics of this fuel source) for natural gas has nearly doubled. It went from $2.71 (per million British Thermal Units (Btu)) in January 2021 to $4.38 in January 2022. Solar power generation has established a base power load at a defined cost and provides diversity in the utility generator's energy portfolio, making them less volatile. As these costs are passed on to the consumers, this is a positive benefit for the consumer and ratepayers. The project is an Alliant-owned generation facility and thus subject to Public Service Commission capitalization rules likely part of a larger rate case docket. The incremental cost to rate payers for this individual project would be deemed insignificant but allows for savings from decreased fuel costs and pricing stabilization compared to alternative electricity generation options.

Rather than taking full lease payments from Alliant Energy for the land use, UW will be utilizing the RECs available for the project. The number of RECs they can get for this project based on the Customer-Hosted Tariff program is based on the power the project will create (1 REC = 1 MWhr of power created). Each REC has a market value which is established on a daily basis on an energy REC market. The terms of the lease agreement between UW and Alliant Energy will lock in this REC value for the duration of the contract. As of January 2022, the RECs available for this project were priced at $4.08/REC. Thus, the number of RECs generated and the price per REC is established and known and added to the lease agreement for the benefit of UW. The lease payment by Alliant Energy to the UW each month will therefore fluctuate based on the prior month's electrical output in megawatt-hours from the project.

Based on a study entitled *The Impact of Construction on the Wisconsin Economy* by C3 Statistical Solutions published in January 2011, every $1 spent directly on construction projects produces an overall economic impact of approximately $1.92. For the projected $2.1 million spent for this project, the

economic multiplier effect would be expected to have a positive impact of approximately $4 million. Using a related formula that 17 jobs are created or retained for every $1 million of construction, this project should create or retain approximately 34 jobs split between design, construction, manufacturing, and the supporting service industries. The project itself promotes a small baseload of work for operations and maintenance once constructed but has minimal impact without many other projects of this type.

D. Other (Archaeological, Historical, etc.)

Energy and Utilities

In the short term, there will be a continued commitment of energy resources to construct the project, including fossil fuel consumption used by construction vehicles and equipment. The energy that will irreversibly be consumed includes fuel and electricity used to run construction equipment and to operate construction material manufacturing plants and quarries. Other electrical needs may consist of lighting, compressors, and tools.

The manufacturing of solar panels require energy up-front to produce. Mining, manufacturing, and transportation all require use of up-front energy. PV panels require energy from mining of raw minerals (primarily quartz, but also metals such as aluminum, copper, or silver) to the manufacturing facility (most PV sourcing is from overseas) to transportation to the site. The life of typical PV panels anticipated to be deployed on this proposed project is 25 years, at which point they are expected to be 80% efficient. Energy will need to be incurred to remove these panels to be recycled as e-waste. Upstream processes (raw material extraction, module production, installation) for photovoltaics account for 60 to 70 percent of the greenhouse gas emissions for solar, with 21 to 26 percent from power generation, and 5 to 20 percent for decommissioning and disposal (NREL November 2012).

The development of this project allows for further advancement of renewable energy goals by Alliant Energy in support of their Clean Energy Blueprint, shifting from reliance on coal-fired fossil fuels. Post-construction, this project will generate electricity (rated as 2.25 MW AC). According to EPA's Greenhouse Gas Equivalencies Calculator, the generation of 2.25 MW system of solar electricity offsets carbon dioxide emissions equivalent to burning 2.1 million pounds of coal, or greenhouse gas emissions equivalent to 4.8 million miles driven by average passenger vehicles. The offset of greenhouse gas emissions is a long-term beneficial impact of the project. According to the National Renewable Energy Laboratory (NREL) the life cycle emission intensity of solar PV is approximately 40 gC02/kWh, while the life cycle emission intensity of coal is approximately 1,000 gC02/kWh: coal produces 25x more carbon dioxide than solar energy to produce the same amount of energy during its life cycle. Other studies such as those done by Brookhaven National Laboratory PV Environmental Research Center have found similar environmental impacts of solar panels compared to the NREL study.

Providing distribution and utility wiring in support of the project will necessitate local land disturbance for direct buried, directionally drilled, or wiring on existing transmission lines. These impacts would be temporary, and any ground disturbed activities would be revegetated and restored in-kind upon completion. Local minor traffic disruptions may be necessary for construction teams to perform these installations, such as taking up all or portions of traffic lanes. Safe practices such as traffic control signs or flagging staff would be employed during times when these activities would occur.

Archeological and Historical

Known, mapped archaeological resources are generally found within this area of Dane County and throughout southern Wisconsin though none are mapped on the proposed project site. Though no impacts are anticipated, care should be taken during any and all soil excavation for footings/foundations and during grading activities. If archaeological resources, or potential archaeological resources, are found during excavation (including human remains), all work must immediately stop, and a qualified archaeologist, as well as the Wisconsin Historical Society's State Archaeologist, called to the site for a formal review before any further work proceeds. Ancillary or secondary/cumulative construction activities

such as conduit or wiring installation to electrical or substation tie-ins would employ similar observative and protective measures during construction.

Hazardous Materials

Impacts associated with hazardous materials or environmental conditions on-site are possible but unlikely. Construction of the solar array will include an on-site transformer that is expected to hold 521 gallons of oil. As such, a SPCC plan will be used only during construction activities.

The Wisconsin WDNR's BRRTS indicates there is a closed ERP site at the KRC. Based on the available information, it appears as though a spill from a transformer occurred in 1999; the exact location is unknown. The spill case was closed in 2000, and the ERP site closed in 2001. It does not appear as though contamination associated with this site has the potential to impact construction activities. Should visually or olfactory impacted soils be discovered during excavation or drilling activities during construction, work will stop and assess environmental impacts and proceed with associated WDNR notifications and requirements.

V. Probable Adverse Impacts that Cannot be Avoided

An unavoidable adverse impact of the proposed project is the commitment of energy, materials, and financial resources. The project will require a total financial commitment of approximately $2.1 million and additional annual operating and maintenance expenses that would be the responsibility of Alliant Energy. No adverse financial impacts are expected to Alliant Energy's ratepayers as a result of this project.

Adverse, unavoidable short-term impacts include traffic and increased noise and dust during construction. Possibly vehicular traffic in the project area will have minor disruptions. Those impacted are likely to be workers on PSL buildings or general users of the KRC campus, such as those using the ropes course.

Noise impacts caused during construction will be intermittent and short-term in nature and felt primarily by those in nearby homes or the PSL or KRC occupants or users. Noise impacts will result from vehicular traffic entering and leaving the project area during the morning and evening when work shifts begin and end and during times when vehicles load and unload equipment and materials. The loudest construction noise impacts will be the pile-driving activities for the array support structure. Noise impacts from the construction of the project will be temporary.

Appropriate and safe access to project site facilities will be put in place for all users. Sequencing will be carefully scheduled and implemented to minimize any adverse impacts.

VI. Relationship between Short-Term Uses of the Environment and the Maintenance and Enhancement of Long-Term Productivity

During the short term, the neighboring residents, PSL staff, and the local environment in the vicinity of the proposed project will be affected by construction and construction-related activities. Related short-term impacts will include increased noise levels and consumption of fuels and other construction materials. These impacts will not exist long-term when once the project is installed and restoration are complete.

During the short term, the local project environment will be affected by construction and construction-related activities. Construction is expected to take up to six months (estimated as October 2022 to April 2023) for substantial completion. Upon completion of the project, it would generate renewable energy as well as combined research and agricultural uses for the UW and Alliant.

The proposed project would commit these resources for the terms of the lease agreement, anticipated to be 25 years. Possible extension of this lease arrangement may be made in the future pending agreement by both parties and following the terms of the contract. However, should the use of this proposed project site conclude at a point in the future, with a further commitment of resources, the site solar array elements could be removed, and the support piles also removed, and the site could be returned to traditional agricultural and farming use.

VII. Irreversible or Irretrievable Commitments of Resources if Action is Implemented.

A. Energy

There will be a commitment of energy resources to construct the project, including fossil fuel consumption used by construction vehicles and equipment. The energy that will irreversibly be consumed includes fuel and electricity used to run construction equipment and to operate construction material manufacturing plants and quarries. Electrical needs may consist of lighting, compressors, and tools.

Long-term, the solar array will have a positive impact on energy by supplying a lower cost, renewable energy source, and a positive effect by allowing an incremental offset of coal-fired or other fossil fuel electrical generation.

B. Archaeological and Historic Features or Sites

Staff responsible for coordination on these features will be doing sow with the Wisconsin Historical Society. Research conducted as part of the WEPA process herein has adequately demonstrated that archaeological resources are present in the regional vicinity of the proposed project, though no artifacts are mapped on the proposed project boundaries. Relevant issues related to Action Planning should any evidence be noted during project construction activities will be incorporated into the detailed design and construction phases of the project.

C. Financial

An unavoidable impact of the proposed action is the commitment of energy, materials, and financial resources to design and complete the project. The entire project will require an initial financial commitment of $2.1 million (estimated based on typical installation costs) and ongoing annual utility and operation and maintenance expenses. Agrivoltaics may increase these costs 7 to 15% with additional costs for interconnection which would further increase overall project costs. However, the funds for construction and project implementation are paid by Alliant Energy, and REC and/or lease payments are a positive impact for the UW. The project should have a minimal impact on ratepayers as part of a future, much larger portfolio to be submitted to PSC as a docket.

VIII. Alternatives

Alternatives to the proposed project are described below.

- No Action/Defer the Project Request:

  This alternative eliminates the construction of the proposed solar array. It allows for continued leased agricultural use at the site and doesn't change any operational or programmatic elements at the facility. A No Action alternative does not allow for the renewable energy production of 2.25 MW of rated electrical production, and therefore Alliant Energy would need to locate and construct another facility of equal size to continue to advance renewable energy production capacity as outlined in their Clean Energy Blueprint. Research elements being proposed under the agrivotaics program and discussed by the UW would not be available for colleges and in sustainability areas. Finally, the economic benefits to the UW from lease and REC payments from Alliant would not be met but would be partially offset through agricultural lease payments. It is not known what that difference is at the time of this publication since the lease arrangement between Alliant Energy and UW is still being negotiated.

- Other Alternatives Explored: Locating elsewhere on the UW-owned areas on the KRC in the general vicinity

  This alternative had positives and negatives. The negatives included: locations that were closer to roads or homes and thus having more visual impacts; flatter areas that would have greater tilting factors in arrays, even when south-facing; steeper areas that make building the proposed facility more difficult; larger or smaller array systems that were either smaller than the maximum potential or larger than the maximum of Alliant Energy's Customer Hosted Renewable Program (200 kW to 2.25 MW in size); were further impacted by setbacks or other permitting items with the Town of Dunn, WDNR, or other regulatory agencies, such as being closer to more sensitive biological, wetland, or cultural resources.

- Notes on Selected Alternative

  This alternative was selected for thoughtfully designed elements such as incorporating agrivoltaics for agricultural benefits, incorporating agrivoltaics for research, potentially pollinator habitat for environmental benefits, the southern portion of the parcel to avoid interference with future campus plans and to minimize visibility; a very large buffer between array and wetland that is located south of project site, but not within the project site. Additionally, the condensed layout as not to take up more land than needed.

IX. Evaluation

A. As a result of this action, is it likely that other events or actions will happen which may significantly affect the environment? If so, list and discuss (Secondary effects)

This action will require the installation of new distribution and transmission utility lines to interconnect to the proposed solar project described herein and not part of this proposed project. This utility transmission route to support this proposed project is not yet known but is anticipated to be a subsurface installation within the right-of-way of local roads – one potential route is shown in Figure 12, Appendix C. Further details of this future project are not known at the time of this publication but are not likely to significantly affect the environment. Depending on the installation methods, this would be direct-bury style installation with excavation, installation, and backfill, or directionally drilled, or a combination of these techniques, in addition to possibly hanging on existing transmission line poles. While specific line routing is not yet designed, the intent is to have no new additional transmission poles added to the existing distribution system in place today.

The project is likely to provide secondary effects in educational and research elements with the UW-Madison programming, including the College of Agricultural and Life Sciences, the College of Engineering, and possibly on-site PSL. These secondary effects may be unknown but could include the study of different agriculture or plants that are compatible with the proposed project elements, the study of infiltration or runoff, power generation research, or other, as of yet unforeseen opportunities. Additionally, this proposed project may influence other elements of a future Master Plan for the Kegonsa Research Campus, possibly influencing future land use on the UW-owned properties, that could include other solar arrays, further agrivoltaic styles or types, or other compliant uses that are symbiotic or complementary to the proposed 2.25 MW solar project. These secondary effects are undefined but, based on these hypothetical possibilities, are anticipated to be environmentally insignificant. Since these projects will also comply with WEPA requirements, separate processes would be implemented that would specifically evaluate those impacts if and when a future proposed project was being evaluated.

Following completion of the construction, noise, emissions, and traffic will not be significantly increased at the site.

B. Does the action alter the environment so a new physical, biological, or socioeconomic environment would exist? (New environmental effect)

Positive impacts are expected for energy cost savings and significant research opportunities. Additional socioeconomic benefits are expected from more research funding brought into the university, growth in enrollment in the UW College of Agricultural and Life Sciences, Engineering, the Wisconsin Energy Institute, other UW programs, and new industry partnerships. The activities of the proposed project will alter the environment as described below:

- Physical – The solar area will be constructed in the agricultural fields adjacent to the KRC. The project area consists of farmland considered prime or of statewide importance. The solar arrays would be placed over this farmland; however, the agrivoltaics method incorporates agriculture into the array allowing farmland to be partially retained. Selective grading will occur where the panels are constructed; however, no mass-grading or significant changes to the topography are anticipated. Structural pilings (driven) are

expected for the solar array. Some excess soil may be generated during construction; however, it is anticipated to be minimal. Any excess soil will be thinly spread on the property and incorporated back into the landscape. Installation of a new three-phase transmission line will be completed by open trenching to the project area. Following the trenching, disturbed areas will be restored (revegetated) to previously existing conditions. No impacts to groundwater or surface water are anticipated.

- Biological – There is not an expected change in the biological environment. There may be small changes that occur depending on the research opportunities and different crops that may be grown as part of the array. Plantings may benefit biological diversity for pollinators or other habitats for fauna.

- Social – The addition of a new solar array will positively impact the academic environment at UW-Madison and the PSL. The agrivoltaics array will provide countless research opportunities to students and faculty across multiple programs. This project facilitates the mission of the UW College of Agricultural and Life Sciences "To advance and share knowledge, discover solutions and promote opportunities in food and agriculture, bioenergy, health, the environment, and human well-being."

- Economic – Economic impacts of the project are anticipated to be primarily long-term from offsetting the energy needs of the KRC. The additional benefits offered via research could lead to the implementation of renewable energy resources and agricultural practices. In addition, there will be short-term economic impacts resulting from jobs created for the construction project. There will be a positive impact on the local and regional retail community resulting from purchasing food, lodging, fuel, equipment, and supplies during the construction phases. The land slated for the array is currently leased by the UW system to a local farmer. Up to 15 acres of leased cropland would be taken out of the lease agreement and negatively impact the current revenue stream. The University would gain renewable energy credits, however, with the installation of the solar array, as well as generate income as part of the lease agreement between UW and Alliant.

C. Are the existing environmental features that would be affected by the proposed action, scarce, either locally or statewide? If so, list and describe. (Geographically scarce)

No. The environmental features that exist at the project site are not geographically scarce. Threatened or endangered species are not anticipated to be impacted.

By utilizing agrivoltaics methods, the proposed project would incorporate agriculture practices into the solar array resulting in a modification of the current land use. This is still retaining some of the existing site usages. Thus, existing environmental features will not significantly change long-term.

D. Does the action and its effects require a decision, which would result in influencing future decisions? Describe. Is the decision precedent-setting?

No. The decision to construct the project does not restrict future decisions or development on the KRC, nor is its precedent-setting in terms of new or expanded campus policy. However, should the project be deemed beneficial for this area of the KRC, the expansion of further solar generation opportunities on property owned by the UW adjacent to this proposed project may be evaluated. Should such opportunities move toward implementation, they would need to go

through a similar level of permitting, including WEPA implementation, independent of the proposed project outlined herein. Any future projects may be able to utilize some of the electrical or communications infrastructure installed for the proposed subject property, but that would be independently determined in the future.

E. Discuss and describe concerns which indicate a serious controversy? (Highly controversial)

Concerns indicative of serious controversy were not identified during this EIA. Scoping Letters were distributed to potentially interested individuals and agencies. Comments were received from the Town of Dunn describing the necessary steps needed to receive a Conditional Use Permit and the general issues that the Town had at this stage of the proposed project development. This is included in Appendix A. No comments from nearby residents were received. Independent local, state, or federal permitting or approvals would be conducted independently from this WEPA compliance.

This item may be further modified in the Final EIA pending the public meeting and comment period upon release of the Draft EIA document.

F. Does the action conflict with official agency plans or with any local, state, or national policy, if so, how? (Is the action inconsistent with long-range plans or policies?)

This action does not conflict with official agency plans or any local, state, or national policy. The action is consistent with the goals established by UW-Madison. The Town of Dunn's Comprehensive Plan expresses a preference for agricultural uses and open space, but the zoning allows for a Conditional Use Permit for utilities. In addition, the subject site is in an area serviced by a sanitary utility and potentially open to infill development. The Town is working on a new ordinance to address solar power. The draft ordinance expresses support for well-regulated, low-impact solar facilities. Further conditions may need to be satisfied by the design of the stakeholder team to receive a Conditional Use Permit from the Town of Dunn.

G. While the action itself may be limited in scope, would repeat actions of this type result in major or significant impacts to the environment? (Cumulative impacts)

This action does not result in significant cumulative impacts on the environment. However, if the solar array were larger, it could have more impacts. Because the site is owned by the UW Board of Regents, any future expansion would be limited. Ultimately, a larger solar array could have a larger impact on agricultural land, but these could also be mitigated. The impacts on the loss of agricultural flexibility are also offset by the benefits of clean energy. In considering the impacts on agriculture, it is important to note that the solar array does not permanently impact the land in the way that mining or drilling can.

H. Will the action modify or destroy any historical, scientific, or archaeological site?

No known historical, scientific, or archaeological site will be modified or destroyed by this action.

I. Is the action irreversible? Will it commit a resource for the foreseeable future? (Does it foreclose future options?)

The action is reversible in that upon completion of the lease agreement between Alliant Energy and the UW, the panels can be removed, the piles, other site infrastructure (electrical and communication cabling, fencing, etc.) can be removed and the land returned to full agricultural production. The proposed action will, however, commit the proposed use through a contractual arrangement for the full term of the lease agreement (anticipated to be 25 years for the initial lease terms, though the lease arrangements between the parties have not been finalized and won't be until certain approvals and permitting milestones are met). The panels are warrantied for 25-years, with approximately 80% to 85% of their useful capacity still available depending on specific efficiency data from manufacturers.

J. Will action result in direct or indirect impacts on ethnic or cultural groups or alter social patterns?

This project will not directly or indirectly impact ethnic or cultural groups or alter social patterns. The project is located near a mobile home park, and while impacts from the proposed project are expected to be minimal, repeated or expanded impacts that get closer to his area may continue to be adverse to a possible small economically disadvantaged community that lives in affordable housing.

K. Other

Other environmental impacts or controversial issues have not been identified in connection with the proposed action.

X. List of Agencies, Groups, and Individuals Contacted Regarding this Project

A complete list of those involved in the scoping and Final EIA process can be found on the distribution list in Appendix A. A Draft EIA Report will be provided to every individual/agency on the distribution list, either in hardcopy or electronic notification.

A copy of the Draft EIA report is available at the following libraries:

Local Libraries

E.D. Locke Public Library
5920 Milwaukee Street
McFarland, WI 53558

Stoughton Public Library
304 S Fourth Street
Stoughton, WI 53589

Websites

The Draft EIA is available for viewing online at:

https://bit.ly/AyresKRC

XI. Recommendation

The UW-Madison Environmental Affairs Coordinator will review the Draft EIA and comments received during the Draft EIA public comment period to determine if a recommendation is needed to elevate this project to a Type I level as an Environmental Impact Statement (EIS).

The following would be executed upon completion of the Final EIA document if deemed not rising to a Type I EIS.

The UW-Madison Environmental Affairs Coordinator has reviewed the Draft EIA and comments received during the Draft EIA public comment period to determine if a recommendation is needed to elevate this project to a Type I level as an Environmental Impact Statement (EIS).

The WEPA Coordinator for the campus concludes that this project is not a "major action that would significantly affect the quality of the human environment", and therefore does not necessitate an EIS.

Therefore, it is the opinion of the campus WEPA Coordinator that this Final EIA meets the spirit and intent of the *Wisconsin Environmental Policy Act*, concludes the WEPA process in accordance with Wis. Stats §1.11, and recommends the campus proceed with the proposed project as planned. See the recommendation below.

RECOMMENDATION (to be completed by institution WEPA Coordinator only)
O **EIS Not Required** Analysis of the expected impact of this proposal is of sufficient scope and detail to conclude that this is not a major action which would significantly affect the quality of the human environment. In my opinion therefore, an environmental impact statement is not required before the board undertakes this action. O Major and Significant Action: **PREPARE EIS**

CERTIFIED TO BE IN COMPLIANCE WITH WEPA - Public Notice Completed (include copy of public notice for permanent record)	
Institution WEPA Coordinator	Date:

This decision is not final until approved by the appropriate Director. Regent Resolution 2508 11/06/81

XII. References

Agrivoltaic examples: https://en.wikipedia.org/wiki/Agrivoltaic

Alliant Energy's Customer Hosted Renewables program: https://www.alliantenergy.com/cleanenergy/whatyoucando/customerhostedrenewables

C3 Statistical Solutions. *The Impact of Construction on the Wisconsin Economy.* January 2011.

Fthenakis, et. al. Emissions from Photovoltaic Life Cycles. National PV EH&S Research Center, Brookhaven National Laboratory, Upton, NY. Environ. Environ. Sci. Technol. 2008, 42, 6, 2168–2174 Publication Date: February 6, 2008

https://doi.org/10.1021/es071763q

J. Malén, *Analysis of noise emissions from solar inverters*, Aalto University School of Science and Technology, 2013.

National Electrical Safety Code, Section 11 Rule 110A: https://standards.ieee.org/wp-content/uploads/import/documents/interpretations/ir579.pdf

National Renewable Energy Laboratory. Life Cycle Greenhouse Gas Emissions from Solar Photovoltaics. November 2012. https://www.nrel.gov/docs/fy13osti/56487.pdf.

NorthStar Analytics, LLC. The University of Wisconsin-Madison's $30 Billion Impact on the Wisconsin Economy. Rep. N.p.: U of Wisconsin Madison, February 2021.

Solar Energy Industry Association. *Solar and Property Value*. July 2019. https://www.seia.org/sites/default/files/2019-09/Solar%20Property%20Value%20FactSheet%202019-PRINT_1.pdf

Town of Dunn Ordinances. https://www.townofdunnwi.gov/ordinances

United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

United States Department of Transportation, Federal Highway Administration. https://www.nrc.gov/docs/ML1225/ML12250A723.pdf

U.S. Energy Information Administration; independent statistics and analysis. *Average U.S. construction costs for solar generation continued to fall in 2019*. July 16, 2021. https://www.eia.gov/todayinenergy/detail.php?id=48736

United States Environmental Protection Agency Envirofacts Website. http://www.epa.gov/enviro/

Wisconsin Department of Agriculture, Trade and Consumer Protection –Storage Tank Database. http://dvmwapps.wi.gov/ER_Tanks/ER-EN-TankSearch.htm

Wisconsin Department of Natural Resources Remediation and Redevelopment Sites Map Website. https://dnr.wisconsin.gov/topic/Brownfields/rrsm.html

Wisconsin Department of Natural Resources Surface Water Data Viewer Website. http://dnrmaps.wi.gov/sl/?Viewer=SWDV

Wisconsin Department of Natural Resources – Solid and Hazardous Waste Information Management System online database. http://dnr.wi.gov/sotw/Welcome.do

Wisconsin Department of Natural Resources - Well Driller Viewer. https://dnrmaps.wi.gov/H5/?viewer=Well_Driller_Viewer

Wisconsin Geological and Natural History Survey. Water-table Elevation and Unlithified Aquifers of Dane County, WI. https://wgnhs.wisc.edu/catalog/dataset/000817/resource/wofr199904plate01/view/fc88f1d4-9b73-4c12-b19c-e4f27b648463

Appendix A

Scoping Letter

- Scoping Letter
- Responses
- Distribution List

Appendix B

Legal Notice

- Draft EIA Public Notice text (legal notice tear sheet from actual newspapers publications to be included in Final EIA)

Appendix C

Site Maps and Additional Site Information

- Figure 1 Regional Location Map
- Figure 2 Site Map
- Figure 3 Topographic Map
- Figure 4 FEMA Flood Map
- Figure 5 DNR Surface Water Data Viewer Wetlands
- Figure 6 Hydrology and Soil
- Figure 7A NRCS Soils
- Figure 7B NRCS Soils Farmland Classification
- Figure 8 Solar Arrays Soil-based Anchor Systems
- Figure 9 Cultural Resources
- Figure 10 Population Density
- Figure 11 Zoning
- Figure 12 Proposed Distribution Line Routing

Appendix D

Site Photographs

Appendix E

Endangered Resources Review Verification Form

NOTE: Information was provided by WDNR and is considered “Confidential,” so this document has been mostly Redacted per WDNR requirements

Appendix F

Environmental Records

- DATCP Storage Tank Database Results
- RR Sites Map
- BRRTS Search Results – Physical Sciences Lab
- BRRTS Search Results – Physical Sciences Lab BARN
- SHWIMS Report

Appendix G

Visual Impacts Model