

**FINAL  
ENVIRONMENTAL ASSESSMENT**

**FOR**

**ROCKFORD SOLAR ENERGY  
PROJECT**

**CHICAGO ROCKFORD INTERNATIONAL  
AIRPORT, WINNEBAGO COUNTY, ILLINOIS**

**U.S. Department of Energy  
Office of Energy Efficiency and Renewable Energy  
Golden Field Office**



**DECEMBER 2011**

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## COVER SHEET

**RESPONSIBLE AGENCY:** U.S. Department of Energy

**TITLE:** *Final Environmental Assessment: Rockford Solar Energy Project, Chicago-Rockford Airport, Winnebago County, Illinois (DOE/EA-1823)*

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**ABSTRACT:** The U.S. Department of Energy (DOE) has provided Federal funding to the Illinois Department of Commerce and Economic Opportunity (DCEO) under the State Energy Program (SEP). DCEO is seeking to provide \$4 million of its SEP funds to Rockford Solar Partners LLC (RSP), who would use these funds for the design, permitting, and construction of a solar photovoltaic facility with a generating capacity of up to 20 megawatts (MW). DOE's Proposed Action would authorize \$4,025,000 million in grant expenditures. The total cost of Rockford Solar Partner's proposed project would be approximately \$127 million.

Prior to DOE's decision to allow the expenditure SEP funds to the Rockford Solar Energy Project (proposed project; RSEP), DOE must first complete review under the *National Environmental Policy Act* (NEPA). This EA analyzes the environmental impacts of the construction, operation, and decommissioning of the proposed project and the alternative of not implementing this project (the No-Action Alternative).

DOE has authorized DCEO to use a percentage of the Federal funding for preliminary activities, which include the EA preparation and studies. Such activities are associated with the proposed action and would not significantly impact the environment nor represent an irreversible or irretrievable commitment of resources in advance of DOE completing the NEPA process for the proposed project.

**PUBLIC INVOLVEMENT:** The public was provided with an opportunity to comment on this EA by sending comments via email, mail, or fax marked to the attention of the NEPA Document Manager listed above. The public comment period was open through October 31, 2011. No public comments were received via e-mail, mail, or fax.

Additionally, a public hearing was held at the Greater Rockford Airport Authority auditorium on October 24, 2011. The hearing was open from 4-7 p.m. No comments were received at the public hearing. The hearing had been publicized in the Rockford Register Star and postcard invitations had been sent to interested parties. Attendance at the hearing included the project proponents, a representative from Rock River Water Reclamation District, and a realtor. Neither outside party provided any formal comments to the court reporter.

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**AVAILABILITY:** This EA is available for review on the DOE Golden Field Office Reading Room Website, [http://www.eere.energy.gov/golden/Reading\\_Room.aspx](http://www.eere.energy.gov/golden/Reading_Room.aspx), and the DOE NEPA Website, <http://nepa.energy.gov>.

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## ACRONYMS AND ABBREVIATIONS

AAIA	<i>Airport and Airway Improvement Act of 1982</i>
BMP	best management practice
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DCEO	Department of Commerce and Economic Opportunity
DOE	U.S. Department of Energy
EA	Environmental Assessment
EPA	U.S. Environmental Protection Agency
FAA	Federal Aviation Administration
FONSI	Finding of No Significant Impact
FPPA	<i>Farmland Protection Policy Act</i>
GHG	greenhouse gas
GRAA	Greater Rockford Airport Authority
IDNR	Illinois Department of Natural Resources
IHPA	Illinois Historic Preservation Agency
NEPA	<i>National Environmental Policy Act</i>
NHPA	<i>National Historic Preservation Act</i>
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
PV	photovoltaic
Recovery Act	<i>American Recovery and Reinvestment Act of 2009</i> (also Recovery Act)
RSP	Rockford Solar Partners, LLC
SEP	State Energy Program
SHPO	State Historic Preservation Office(r)
U.S.C.	United States Code
USFWS	U.S. Fish and Wildlife Service

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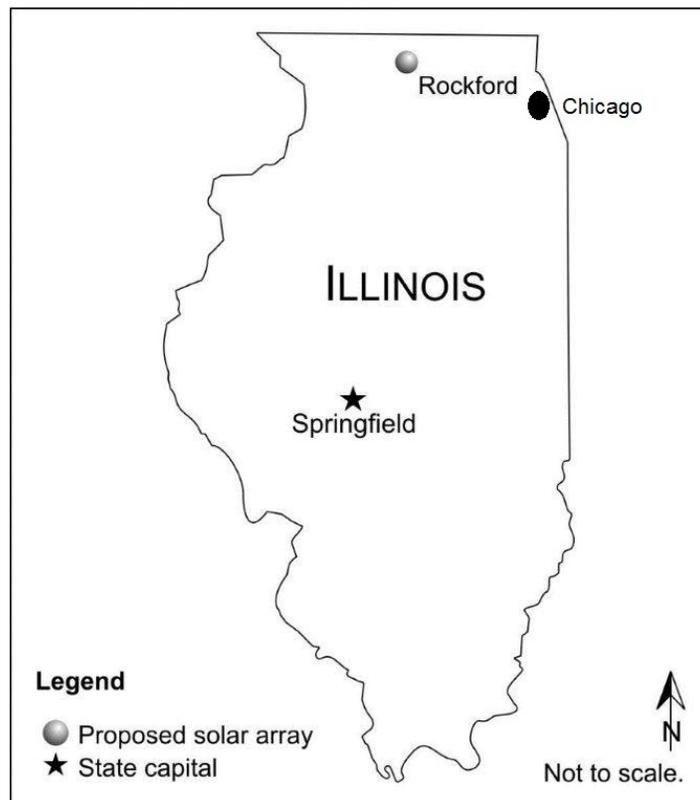
**Appendix H:** Wanxiang & City of Rockford- Developmental Agreement

## 1. INTRODUCTION

The Illinois State Energy Program (SEP) through the *American Recovery and Reinvestment Act of 2009* (the Recovery Act; Public Law 111-5; 123 Stat. 115) receives financial and technical assistance grants from the U.S. Department of Energy (DOE) to promote the conservation of energy and to reduce dependence on imported oil.

The SEP is authorized under the *Energy Policy and Conservation Act of 1975*, as amended, and can be used to fund a wide variety of activities related to energy efficiency and renewable energy (42 United States Code (U.S.C.) 6321 et seq. and Title 10 Code of Federal Regulations (CFR) Part 420). Through the Recovery Act, Congress appropriated a total of \$3.1 billion for DOE's SEP support. Of the \$3.1 billion, the State of Illinois received over \$101 million pursuant to a Federal formula for the distribution of SEP funds.

The Illinois Department of Commerce and Economic Development (DCEO), the administrator of the Illinois SEP program, chose Rockford Solar Partners, LLC (RSP) as the recipient of a \$4 million dollar grant to construct and operate a 20-megawatt photovoltaic (PV) solar power generation facility in Rockford, Winnebago County, Illinois (Rockford Solar Energy Project, or proposed project). RSP is a joint venture between Wanxiang Investment Corporation of Rockford and New Generation Power, a Chicago-based renewable energy developer. The proposed 20-megawatt project would be located on property within the boundaries of the Chicago Rockford International Airport. Rockford is approximately 70 miles northwest of Chicago (Figure 1-1).



**Figure 1-1. General Location of Rockford**

Federal funding of projects under SEP requires compliance with the *National Environmental Policy Act of 1969*, as amended (NEPA; 42 U.S.C 4321 *et seq.*), the Council on Environmental Quality regulations (CEQ; 40 CFR Parts 1500 to 1508), and DOE implementing procedures (10 CFR Part 1021). Therefore, DOE prepared this *Environmental Assessment for the Rockford Solar Energy Project, City of Rockford, Winnebago County, Illinois* (DOE/EA-1823) to evaluate the potential environmental consequences of DOE's Proposed Action, RSP's proposed project, and the No-Action Alternative. DOE's Proposed Action would authorize about \$4 million in grant expenditures for use by RSP in the development of the proposed project. The total cost of the proposed project is approximately \$127 million.

## 1.1 National Environmental Policy Act Requirements

In accordance with DOE NEPA implementing procedures, DOE must evaluate the potential environmental impacts of Proposed Actions that could have a significant impact on human health and the environment, including decisions on whether to provide financial assistance to government agencies and private entities. In compliance with these regulations and DOE's procedures, this Environmental Assessment (EA):

- Examines the potential direct and indirect environmental impacts of the Proposed Action and the No-Action Alternative;
- Identifies potential alternatives to the Proposed Action;
- Identifies unavoidable adverse environmental impacts if the Proposed Action is implemented;
- Describes the relationship between local short-term uses of the environment and the maintenance and enhancement of long-term productivity;
- Characterizes irreversible and irretrievable commitments of resources that would be involved if DOE funded the proposed project; and
- Analyzes past, present, and reasonably foreseeable actions to evaluate potential cumulative impacts.

DOE must meet the requirements of NEPA before it can make a final decision to proceed with a proposed Federal action that could cause significant impacts to human health or the environment. This EA provides DOE and other decision makers the information necessary to make an informed decision about the construction and operation of the proposed project. If DOE determines as a result of this EA that the proposed project would not result in significant adverse impacts, it will issue a Finding of No Significant Impact (FONSI). If DOE concludes that the proposed project would cause actions that would significantly and adversely affect the quality of the human environment, it could announce its intent to prepare an environmental impact statement to examine the proposed project in more detail.

For purposes of comparison, this EA also evaluates the impacts that could occur if DOE did not provide funding (the No-Action Alternative), and impacts of other alternatives to the proposed project, under which DOE assumes RSP would not proceed with the project.

## 1.2 Federal Aviation Administration as a Cooperating Agency

Due to the proposed location of the proposed project at the Chicago Rockford International Airport, DOE acknowledges that the Federal Aviation Administration (FAA) has jurisdiction by law and special

expertise applicable to this EA effort. For this EA, DOE is the Lead Agency, and the FAA is a Cooperating Agency.

DOE consulted with the FAA to ensure process coordination, identifying and obtaining relevant data, establishing schedules, and resolving issues. Special consideration was given to the FAA on topics over which the FAA has jurisdiction by law or special expertise, including the areas of alternatives, land use, Section 4(f) of the United States Department of Transportation Act of 1966) analysis, and FAA's Federal actions.

DOE provided the FAA with copies of documents underlying the EA relevant to the FAA's responsibilities, including technical reports, data, analyses, comments received, and working drafts related to environmental reviews.

The FAA provided specific guidance on public involvement strategies, data needs, management actions to resolve planning issues, identification of the effects of alternatives, and potential mitigation measures. As a Cooperating Agency, the FAA is responsible for issuing its own NEPA determination and/or decision documents associated with its specific Federal action concerning the project.

### **1.3 Illinois' State Energy Program**

The Illinois SEP is using its Recovery Act funding for programs to increase the energy efficiency of businesses and industry while promoting deployment of clean energy projects that will help improve the cost-effectiveness and economic stability of businesses and industry in the state.

For the funding of this proposed project, DOE is the Federal action agency, while the DCEO is the recipient of Federal funding and RSP is the sub-recipient of this funding. The proposed project would be constructed within the boundaries of the Chicago Rockford International Airport.

### **1.4 Purpose and Need**

#### **1.4.1 DOE'S PURPOSE AND NEED**

DOE's purpose and need is to ensure that SEP funds are used for activities that meet congressional aims to improve energy efficiency, reduce dependence on imported oil, decrease energy consumption, create and retain jobs, and promote renewable energy. Providing funding as part of Illinois' SEP grant to RSP would partially satisfy the need of that program to assist U.S. cities, counties, States, territories, and Indian tribes to develop, promote, implement, and manage energy efficiency and conservation projects and programs designed to:

- Reduce fossil fuel emissions;
- Reduce the total energy use of the eligible entities;
- Improve energy efficiency in the transportation, building, and other appropriate sectors; and
- Create and retain jobs.

Congress enacted the American Reinvestment and Recovery Act (Recovery Act) to create jobs, restore economic growth, and strengthen America's middle class through measures that modernize the nation's infrastructure, enhance America's energy independence, expand educational opportunities, preserve and improve affordable health care, provide tax relief, and protect those in greatest need. Provision of funds under SEP would partially satisfy the needs identified under the Recovery Act.

### 1.4.2 FAA'S PURPOSE AND NEED

The Federal Aviation Administration's (FAA) purpose and need is to ensure that the proposed solar project is consistent with an airport sponsor's Federal obligations regarding financial self-sustainability and retention of airport revenue, as well as national environmental policy. Section 511(a)(9) of the Airport and Airway Improvement Act of 1982 (AAIA) and Grant Assurance 24 requires airports to be as self-sustaining as possible. The proposed development would provide the Airport with a new revenue source. Grant Assurance 31: Land Disposal further emphasizes the importance of airports being self-sufficient. To obtain this goal, the FAA encourages airport sponsors to dispose of land no longer needed for airport purposes. The proposed facility would be located within the runway protection zone, and the land must therefore remain under the ownership of the GRAA. Grant Assurance 31c states the following:

*“Land shall be considered to be needed for airport purposes under this assurance if (1) it may be needed for aeronautical purposes (including runway protection zones) or serve as noise buffer land, and (2) the revenue from interim uses of such land contributes to the financial self-sufficiency of the airport.”*

Executive Order 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, sets goals in the areas of energy efficiency, acquisition, renewable energy, toxics reductions, recycling, renewable energy, sustainable buildings, electronics stewardship, fleets, and water conservation. The proposed solar project at RFD would contribute to these national goals.

In response to growing interest in solar energy at airports, the FAA has prepared *Technical Guidance for Evaluating Selected Solar Technologies on Airports* to meet the regulatory and informational needs of the FAA Airports organization and airport sponsors. This guidance states:

*“Solar is a renewable energy source that contributes to national goals of sustainability, energy independence, and air quality improvement. It is particularly well-suited to airports because of the available space at airports, unobstructed terrain, and energy demand.”*

This guidance has been utilized in the development and evaluation of the proposed solar farm at RFD. Further information regarding the FAA's proposed federal actions required as a part of this project is included in Section 2.1 of this document.

### 1.4.3 STATE OF ILLINOIS' PURPOSE AND NEED

Illinois' purpose and need is to grow the economy of the state by connecting companies and communities to financial and technical resources to deploy renewable energy technologies, and to support the needs of SEP and the Recovery Act.

In August of 2010, the Governor of Illinois signed the “Solar Ramp-Up Bill” (HB 6202), which establishes interim goals to generate 6 percent (or 3 million kilowatt hours) of the State's energy needs through solar power by 2015. The proposed project would contribute to helping the State meet this goal by providing 20-megawatt of solar PV energy.

## 1.5 Public Involvement Process and Consultations

### 1.5.1 PUBLIC INVOLVEMENT

RSP provided agencies with an early notice letter on July 8<sup>th</sup>, 2010 stating, “This letter presents your agency with an early opportunity to comment on any issues or concerns related to the effects that the proposed development may have on the study area.... Please provide us with any comments on potential impacts and concerns that should be addressed in the EA. In addition, if your agency is a resource agency responsible for documentation and/or protection of any natural resources, we ask that you provide us with relevant information regarding the type of resource, location, importance, etc. as it relates to this project.” RSP received the following comments regarding this project, the aforementioned notices and distribution lists are provided in Appendix A of this EA:

#### Scoping Responses

Agency	Comments	Response
Illinois Department of Agriculture – Bureau of Land & Water Resources	No comments, recommended contact with Terry Schaddel at Illinois Department of Aeronautics	Terry Schaddel was contacted as recommended. He referred questions to Amy Hanson with Federal Aviation Administration. Ms. Hanson requested coordinating agency status with DOE, which was granted.
Illinois Department of Natural Resources	EcoCAT review indicated adverse effects of this project are unlikely	None
Illinois Department of Natural Resources	Project complies with Illinois Farmland Preservation Act	None
Illinois Environmental Protection Agency (IEPA)	IEPA has no objections to the project. An NPDES storm water permit would be required if more than 1 acre of land is disturbed. Soil and hazardous waste must be properly disposed of.	An NPDES storm water permit would be required and would be obtained prior to start of construction.
Illinois Historic Preservation Agency	A Phase I Archaeological Survey is required.	Phase I Archaeological Survey was completed. No additional investigations were identified as necessary. Illinois Historic Preservation Agency concurred. Documented compliance under Section 106 of the National Historic Preservation Act.
Rock River Water Reclamation District	RRWRD does not have any existing facilities that would be impacted by development of site.	None.
United States Coast Guard	No navigable waterways would be impacted by this project.	None

Agency	Comments	Response
United States Department of Agriculture – Natural Resources Conservation Service	Comments on flood plain, flooding, hydric soils, sediment and erosion control plans, high water table, and wetland delineation	Site was revised to eliminate all development in any wetland area. Development would still occur in the floodplain but would avoid the existing floodway. An NPDES storm water permit would be required and would be obtained prior to start of construction.
United States Fish and Wildlife Service	Comments that tree removal cannot occur between 4/1 and 9/30 each year to protect Indiana Bat habitat.	Tree removal cannot occur between 4/1 and 9/30. Documented compliance under Section 7 of the Endangered Species Act. Please see Section 3.2.2.5 for the conclusion of the Section 7 consultation.
USEPA – Region V	USEPA has no comments, but referred letter to Federal Aviation Administration (FAA)	None
Winnebago County Forest Preserve	Comments on water quality impacts to Kilbuck Creek and Kishwaukee River, run off, and trees.	Site was re-configured to address these issues. The site no longer borders Kishwaukee River and densely forested areas would remain untouched. Site was revised to eliminate all development in any wetland area. Development would still occur in the floodplain but would avoid the existing floodway.

### 1.5.2 CONSULTATIONS

The proposed project would be located within a 100-year floodplain. In accordance with the regulations contained in 10 CFR Part 1022, “Compliance with Floodplain Environmental Review Requirements,” DOE established policy and procedures to consider impacts on floodplains and wetlands as part of the proposed floodplain action and to meet the public notification process required under 10 CFR Part 1022. Therefore, DOE prepared a Floodplain and Wetlands Assessment (see Appendix B) and sent a Notice of Proposed Floodplain or Wetlands Action to the distribution list in Appendix A concurrently with the Public Comment period for the EA.

DOE’s compliance with Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act are described in Section 3.2.2.2 (Cultural and Historic Resources) and 3.2.2.5 (Biological Resources).

Correspondence with these agencies and other agencies are provided in Appendix C of this EA.

### 1.5.3 DRAFT ENVIRONMENTAL ASSESSMENT

The Draft EA was made available on September 20, 2011 for a 45-day public comment period ending October 31, 2011. A Notice of Availability was (NOA) was published in the Rockford Register Star] on September 21, 2011 and the Draft EA and NOA were posted on the DOE Golden Field Office Public Reading Room website:

[http://www.eere.energy.gov/golden/Reading\\_Room.aspx](http://www.eere.energy.gov/golden/Reading_Room.aspx)

Postcard NOAs were sent to the individuals and agencies on the Draft EA's Appendix A Distribution List, which included all the individuals and entities expressing interest during the scoping process. The public was invited to comment via email or written correspondence to the postal or email address provided in the cover sheet. There were no comments received by DOE on the Draft EA. The public was also invited to attend a public hearing at the Greater Rockford Airport Authority auditorium on October 24, 2011. The hearing was open from 4-7 p.m. No comments were received at the public hearing. The hearing had been publicized in the Rockford Register Star and postcard invitations had been sent to interested parties. Attendance at the hearing included the project proponents, a representative from Rock River Water Reclamation District, and a realtor. Neither outside party provided any formal comments to the court reporter.

## **2. PROPOSED ACTIONS AND ALTERNATIVES**

### **2.1 Proposed Federal Actions**

#### **2.1.1 DOE'S PROPOSED ACTION**

DOE proposes to authorize the use of approximately \$4 million of Federal funding through the State of Illinois under the DOE SEP. The DCEO, which administers the State of Illinois SEP, selected RSP to receive a sub-grant for its Rockford Solar Energy Project, a proposed solar PV facility generating up to 20-megawatt that would be located on Chicago Rockford International Airport property. DOE is proposing to authorize the State of Illinois to expend such Federal funding to RSP to design, permit, and construct the Rockford Solar Energy Project. DOE has already authorized the use of a percentage of the Federal funding for preliminary activities, including the preparation of this EA and associated analyses. These activities are associated with the proposed project and do not significantly impact the environment nor represent an irreversible or irretrievable commitment of resources in advance of DOE completing the NEPA process for the proposed project.

#### **2.1.2 FAA'S PROPOSED ACTION**

Due to the location of the project at the Chicago Rockford International Airport, the proposed project would also require FAA approval, pursuant to the following Federal statutory or regulatory requirements:

- Unconditional approval of the revised airport layout plan depicting the proposed solar facility;
- Final airspace determination (14 CFR Part 157, [49 U.S.C. 40103(b), 40113]);
- Final determination of potential obstructions to navigable airspace per an aeronautical study outlined under (14 CFR Part 77, 49 U.S.C. 40103(b) and 40113);
- Issue a finding for Executive Order 12372, "Intergovernmental Review of Federal Programs";
- Issue a finding for the Department of Transportation Order 5650.2, "Floodplain Management and Protection," which implements Federal Executive Order 11988, "Floodplain Management"

## **2.2 Rockford Solar Partners Proposed Project**

RSP is a joint venture between Wanxiang America Corporation, Illinois, and New Generation Power, a Chicago-based renewable energy developer. RSP proposes to construct and operate a 20-megawatt PV power generation facility on property within the boundaries of the Chicago Rockford International Airport. The Illinois DCEO selected RSP to receive a DOE grant for approximately \$4 million for the proposed project. The total project cost is estimated to be \$127 million.

#### **2.2.1 PROJECT SITE**

The proposed project would be located on land owned by the Greater Rockford Airport Authority (GRAA) at the Chicago Rockford International Airport in the city of Rockford, Winnebago County, Illinois. The proposed location is adjacent to Baxter and South Bend Roads. Title to the land is held in a fixed-term leasehold estate. GRAA is the landowner, the City of Rockford is the lessee, and Wanxiang America Corporation is the proposed sub-lessee. The lease term would be for 30 years and stipulates that Wanxiang is fully permitted to use the land as "development and operation of a solar farm." The lease

would provide an option that can be exercised by Wanxiang to extend the lease term for additional periods with the same terms and conditions.

The proposed project site is approximately 70 acres. Figure 2-1 shows the project site boundaries and the area that would be potentially disturbed. The site is bordered on the north by Beltline Road. South Bend/Baxter Road is to the south of the site with vacant land beyond and to the west. Railroad tracks and vacant land are east of the site. The proposed site is approximately 0.43 mile from the airport's nearest runway end to the north across the Kishwaukee River.



**Figure 2-1. Proposed Location of Solar Farm (Preferred Alternative Site)**

The site is predominantly flat with grades sloping to the southwest. Soil samples indicate presence of a mix of top soils, sand and gravel. Minimal grading (approximately 5 acres) is anticipated. A new gravel access road from South Bend Road to the panels would be constructed on the project site. Two unused roadways were previously vacated on the proposed site and would be replaced by the new gravel roads. The approximate global positioning system coordinates for the center point of the project site are 42°10'22.45" N, 89°5'21.88" W.

## 2.2.2 ROCKFORD SOLAR ENERGY PROJECT'S CONSTRUCTION AND OPERATION

The following sections provide information on the proposed design, installation, and operation of RSP's proposed solar farm. Figure 2-3 provides a site layout plan.

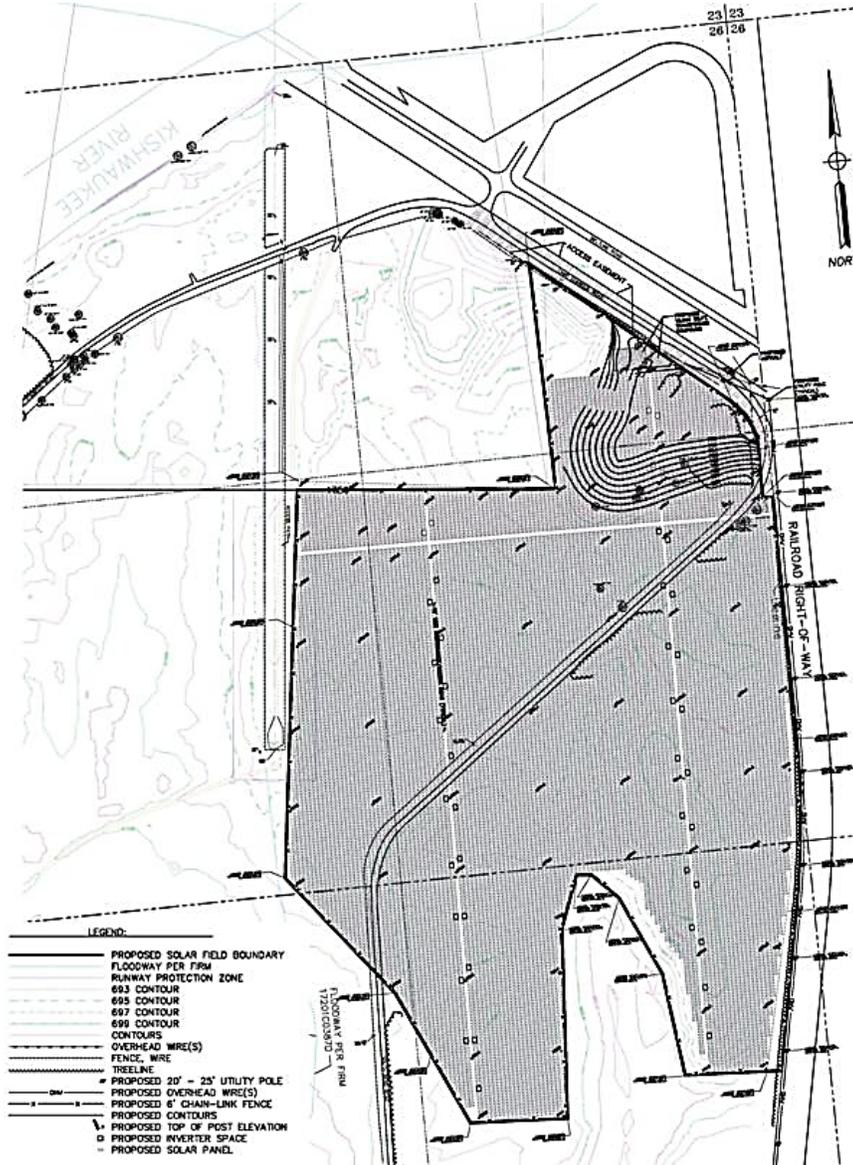


Figure 2-3. Proposed Solar Farm Site Plan (See Appendix D, for high resolution image)

### 2.2.2.1 Design, Installation, and Construction

The solar farm would utilize 280-watt WXS280P multi-silicon solar cells manufactured by Wanxiang America Corporation. The cells would be mounted in groups of four panels using a fixed ground mount PV system manufactured by Patriot Solar Group. The four panels would be attached to a rack mounted on two support posts approximately 13 feet apart. The posts would be driven into the ground, leaving approximately 2 to 5 feet exposed aboveground. The elevation of the top of the posts would be carefully

calculated so that the posts would be at least 18 inches above grade in all locations and have at least 2 feet of clearance above the established base flood elevation. The proposed ground mount system would be designed to withstand winds up to 90 miles per hour.

The panels would face due south with an upward tilt angle of 15 degrees to optimize output during the summer months and allow for passive snow clearing during winter months. The tilt angle was selected in conjunction with panel spacing between rows to allow for maintenance access and to limit shading from adjacent panels. The grade of the site would rise from south to north from 0 to 5 percent; therefore, the panels would be slightly lower at the southern end of the field. Throughout much of the site there would also be a grade change from east to west, also approximately 0 to 5 percent. The rise and fall of panels would be minimized as much as possible by adjusting the post height while still maintaining the minimum and maximum heights; that is, at least 18 inches above grade but no higher than 5 feet.

The project's PV solar modules would be mounted on aluminum racks with multiple vertical pile-driven support structures throughout the 70-acre site. Once the modules were mounted, each string would be wired to a combiner box. Each combined circuit would be installed in conduit and run in conduit within the supporting frame of the solar panels to a transition box in one of the area inverter houses where the circuits would be re-combined into array circuits and connected to the inverter.

Forty-two inverter houses would be constructed of concrete tip-up panels with concrete floors and roofs and would be placed in the northern portion of the site. Each inverter house would be 7 feet tall by 3 feet wide by 9 feet long, and would include several conduits and cables to the utility-owned transformer, substation, and electrical switchgear. Cables would run aboveground in conduit at the approximate midpoint of each solar panel to newly constructed overhead power lines along the western edge of the railway right-of-way. Poles are planned to be placed at 300-foot intervals to the interconnect point. The 500-kilowatt inverters would be placed in the inverter houses. Each inverter house would contain multiple 500-kilowatt inverters. The proposed project also would include a comprehensive data acquisition and monitoring system and several weather stations for site data collection, as well as lightning protection, security fencing, and security personnel. Figure 2-3 depicts the proposed interconnection route, utility-owned conduits, cables, and existing substations, please see Appendix D for the high resolution image.

Approximately 70 acres of land would be disturbed at the proposed project site. Approximately 10 acres of the project site would require tree clearing, which would occur along vacated roads onsite, along the site perimeter, and on the northeast portion of the site (Figure 2-1).

During construction, there would be an average of six pieces of equipment onsite daily. The first part of the project would involve heavy equipment for earth moving and minimal grading, and the second part would involve smaller equipment for installing facility equipment and conducting finish work. Construction staging would occur on the northern-most portion of the proposed project site, along Beltline Road. The entire project, including the construction staging area, would be outside the runway protection zone. This area is above the 700-foot flood elevation and is the designated area for the storage of the job trailer and construction equipment. No fill material would be brought onto the proposed project site, and no fill material would be generated by the construction. Current plans for site grading would maintain the existing grade where possible and leave topsoil in place.

Total project completion time for design, installation, and construction is estimated to be 12 months.

### **2.2.2.2 Operation and Maintenance**

Operation and maintenance activities associated with the proposed solar farm would be minimal. The facility would operate during daylight hours only and would require up to 5 full-time personnel for operation, maintenance, and security.

The operations workforce would be onsite on an as-needed basis. At times when non-routine maintenance or major repairs were required, additional workers or contract labor could be utilized.

Long-term maintenance schedules would include periodic maintenance and equipment servicing per the manufacturer's recommendations. Moving parts, such as motorized circuit breakers/disconnects and inverter ventilation equipment would be serviced on a regular basis. Additional maintenance would take place as required.

No heavy equipment would be used for normal operations. Vehicles that would be used as part of maintenance could include trucks, forklifts, and loaders. Water trucks would be used to wash panels. Larger off-road equipment may be brought onsite on an as-needed basis for replacement or repair purposes.

### **2.2.2.3 Decommissioning**

The solar panels and some of the other components are expected to have a useful life of at least 25 years; however, the operational life of the facility could be much greater if facility components, including panels, are replaced at the end of their life cycles. At the end of the solar project's life cycle, decommissioning (dismantling) of the system or re-commissioning or re-powering (installation of a new system) would occur. While solar panels have a manufacturer's expected life of 20 to 25 years, the solar industry does not have much experience with decommissioning and re-commissioning solar facilities because the majority of utility-scale solar PV facilities built in the United States are still operating. In addition, useful life varies and is dependent upon a particular system's production, operation and management costs, and costs and benefits of repowering the system.

Activities associated with decommissioning the project are expected to be similar to those in the initial construction. When RSP terminates the project, and if an upgrade is not considered, RSP would sell, reuse, or recycle salvageable items (including fluids), as appropriate; unsalvageable material would be disposed of at authorized sites. The soil surface would be restored as closely as possible to its original condition. Reclamation procedures would be based on site-specific requirements commonly employed at the time the area is to be reclaimed and could include re-grading, adding topsoil, and replanting all disturbed areas.

## **2.2.3 PROJECT PROPONENT-COMMITTED MEASURES**

Based on the activities proposed above and the estimate of potential environmental impacts presented in Chapter 3 of this EA, RSP and GRAA have committed to the actions listed below.

### **2.2.3.1 Water Resources – Ground and Surface Water**

Storm water and silt runoff management would include silt fencing and stabilized rock construction entrances and use of an estimated 2,000 gallons per day of water for dust mitigation. RSP would acquire and adhere to a National Pollution Discharge Elimination System (NPDES) General Storm Water Permit for Construction Activities from the Illinois Environmental Protection Agency. All site runoff would be managed in accordance with the pollution prevention plan prepared under that permit.

It is estimated that as much as 328,000 gallons of water per year would be required for cleaning PV panels. Current plans are to use water only for cleaning; should cleaning require amended water in the future, environmentally benign materials would be used.

### **2.2.3.2 Waste Management**

Waste generated during construction, operation, and eventual decommissioning of the proposed project, including used lubricants and other nonhazardous municipal waste, would be handled, collected, transferred and reused/recycled in accordance with applicable Federal, State, and local regulations. All hazardous material would be stored at an elevation above the 100- year floodplain.

### **2.2.3.3 Biological Resources**

A 10-acre field with scattered trees (Figure 2-1) is likely to be cleared during the Indiana bat maternity season, which occurs from April 1 through September 30 in Illinois. In order to reduce the potential for take of Indiana bats, RSP conducted a walking survey of the area on February 16, 2011, to locate potentially suitable Indiana bat roost trees (Appendix E). The survey identified two trees in the area that meet the criteria for suitable Indiana bat roost trees. Such suitable roosting trees would either be cleared out during non-maternity season (that is, between October 1 and March 31) or after a bat emergence survey indicated that the trees had not been inhabited by bats over two consecutive nights and that there were no signs of daytime bat use over the same period.

All construction will be performed in accordance with the “Illinois Standard Specifications for Construction of Airports – State of Illinois – Department of Transportation – Division of Aeronautics – Effective Date April 1, 2010”. Specifically Division V of the document, “Turfing– Item 901 Seeding” addresses the restricted use of non-wildlife attracting groundcover post construction.

### **2.2.3.4 Human Health and Safety**

The construction contractor and facility operator would prepare a health and safety plan before beginning work, according to the Occupational Safety and Health Administration requirements.

### **2.2.3.5 Air Quality**

Temporary dust generated during construction and decommissioning would be minimized to the extent practicable (for example, by keeping gravel on roads and watering dry, unpaved roads).

### **2.2.3.6 Cultural and Historic Resources**

If archaeological resources were encountered during construction, ground-disturbing activities would cease, and construction personnel would contact the Illinois Historic Preservation Agency (IHPA) for resolution and further instruction regarding additional studies and/or potential mitigation measures required in accordance with the NHPA.

### **2.2.3.7 Noise**

All construction activities would occur during normal working hours to avoid noise and other disturbances to surrounding areas, and would conform to all local noise ordinances and other applicable Federal, State, and local requirements.

### **2.2.3.8 Utilities and Energy**

While impacts to the electromagnetic communication links (for instance, radio, microwave, radar) are not anticipated, should another Federal agency or private entity identify concerns with the proposed project, the concerns of the party will be addressed.

An analysis of the potential impacts of reflectivity (also known as solar glare) and communication systems interference on sensitive airport receptors was conducted for FAA. The FAA has completed an aeronautical study (Appendix C) of the proposed solar facility, including a review of the reflectivity analysis. Based on the FAA's review, no negative impacts to operation and/or navigational aids at RFD are anticipated. However, if any unforeseen impacts on airport operations should occur, RSP and/or the airport would mitigate the impacts to FAA's satisfaction and in accordance with the Airport's Grant Assurances.

## **2.3 Alternatives**

### **2.3.1 DOE'S ACTION ALTERNATIVE**

DOE's alternatives to its Proposed Action relating to Illinois' use of its SEP funds are limited to: (1) Allowing Illinois to provide funding to the proposed project; and (2) Not allowing Illinois to provide grant funding for the proposed project. The Illinois SEP selection process is described below. One alternative Illinois is considering is equivalent to DOE's No-Action Alternative and is described in Section 2.3.3.

### **2.3.2 ILLINOIS' SEP PROJECT SELECTION PROCESS**

The Illinois DCEO is using its Recovery Act funds for four sub-programs:

- Energy Efficiency Development
- Renewable Energy Development
- Green Manufacturing
- Biofuels Development

Illinois' DCEO issued a Request for Proposal for the SEP-funded Renewable Energy Development Program. The Illinois program used the following criteria for selection: project readiness; matching fund capabilities, financing, and cost-effectiveness; economic impact for Illinois; project characteristics and potential for innovation; and a project's ability to (1) provide emission-free energy, and (2) create jobs during the construction of the project. Illinois has informed DOE that it is not considering any project-specific alternatives to the Rockford Solar Energy Project.

### **2.3.3 NO-ACTION ALTERNATIVE**

CEQ regulations include specific directions in the consideration of alternatives. Section 1502.14(d) of the regulations state; "Agencies shall include the alternative of no action in any environmental analysis."

Under the No-Action Alternative for the proposed project, DOE would not allow Illinois to use its SEP funds for the proposed solar energy project generating up to 20-megawatt. As a result, implementation of the proposed project would be delayed while RSP obtained other funding sources, or abandoned if other funding sources could not be obtained. DOE assumes, for purposes of this EA, that the project would not proceed without SEP funding. Using this assumption allows a comparison between the potential impacts

of the project as proposed and the impacts of not proceeding with the project. Without the proposed project, Chicago Rockford International Airport operations would continue as otherwise planned, without the proposed solar installation and the revenue generated from the land lease. Furthermore, reductions in future increases in fossil fuel use and improvements in energy efficiency would not occur and DOE's ability to achieve its objectives under SEP and the Recovery Act would be impaired as would its ability to create jobs and invest in the nation's infrastructure to further the goals of the Recovery Act. Potential impacts to geology, land use, air quality, water resources, biological resources, historic and cultural resources, and transportation would not occur.

### **2.3.4 GRAA AND RSP'S ALTERNATIVE ANALYSIS**

Due to the location of the proposed project at the Chicago Rockford International Airport, the FAA requires that all reasonable alternatives to its Proposed Action be considered. The examination of site specific alternatives is an integral part of FAA's NEPA process.

Other on-airport sites were investigated, while taking into consideration the constraints shown in the airport layout plan (Figure 2-5). Four sites, including the preferred alternative, were identified on undeveloped sites on existing airport property and that are outside of the FAA operational surfaces, safety areas, protection zones, building restriction line, and proposed area of future development, as identified in the figure. The following sections describe these sites.

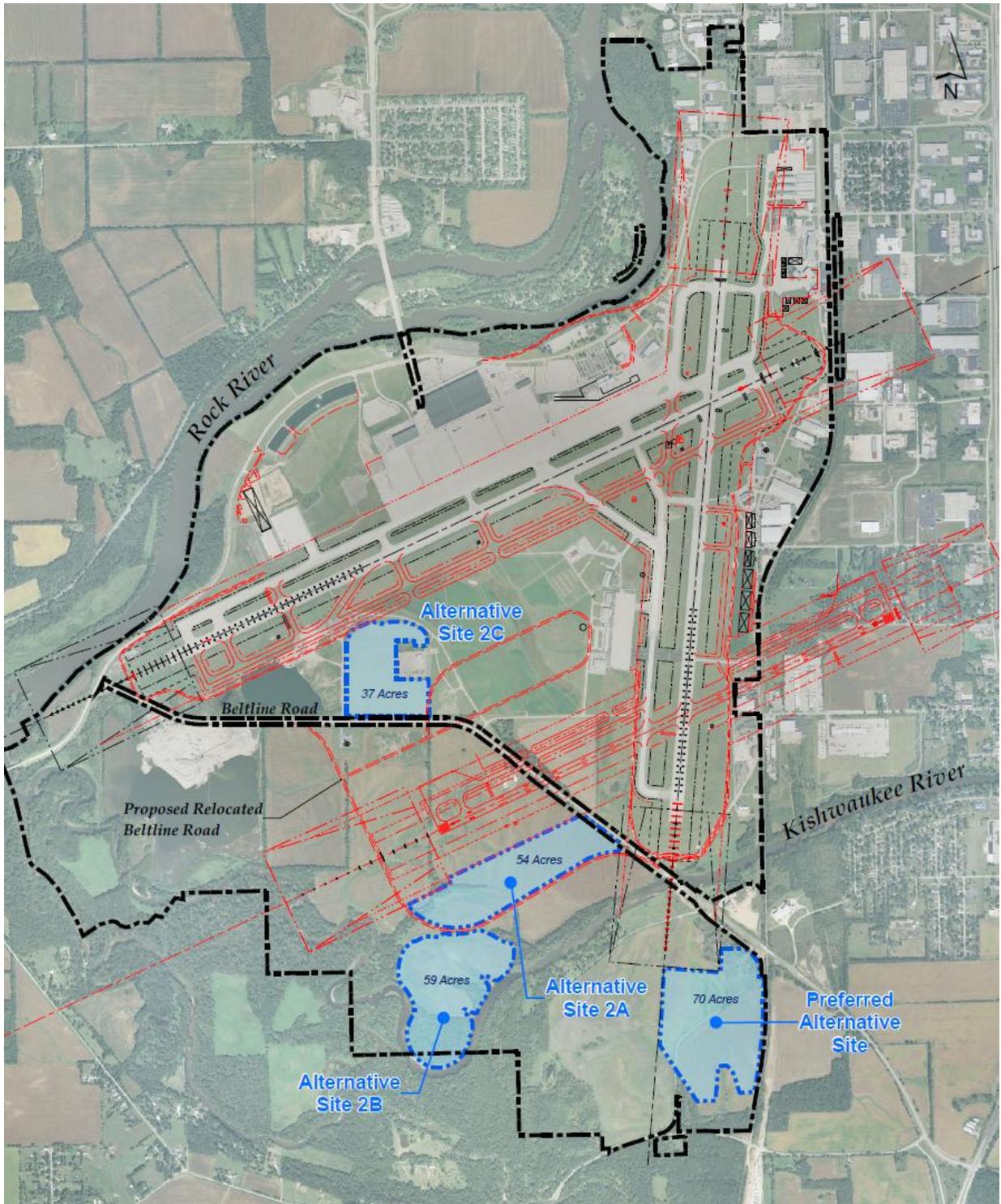


Figure 2-5. On-Airport Alternatives

### 2.3.4.1 Alternative Site 2A – Southwest Quadrant

This alternative site is located along the proposed Runway 7R/25L, just north of the proposed relocated Bellline Road and north of Kishwaukee River (see Figure 2-5), and is immediately adjacent to the 35-foot

building restriction line. This site is currently vacant and encompasses approximately 54 acres and would be located within the airport perimeter fence. This area is planned for an aviation-related use associated with the construction of the proposed Runway 7R/25L.

Because the area is planned for an aviation-related use associated with the construction of the proposed Runway 7R/25L, this site was dismissed from further consideration.

#### **2.3.4.2 Alternative Site 2B – Southwest Quadrant**

This alternative site is located south of Beltline Road, just north of the Kishwaukee River and northwest of the Runway 19 approach end (see Figure 2-5). This site is currently vacant and encompasses approximately 59 acres. The site is located outside of the airport perimeter fence.

The size, configuration, and location of this site would not be adequate to develop the proposed RSP 20-megawatt solar facility. The site is immediately adjacent to the Kishwaukee River, consists of approximately 16 acres of forested vegetation (which would have to be removed), and is located entirely within the Kishwaukee floodway, which is in the 100-year floodplain. The floodway is the channel and the adjacent portion of the floodplain that is needed to safely convey and store flood waters. It is the area subject to higher velocities and inundation with appreciable depths at frequent intervals. The Illinois Department of Natural Resources (IDNR) regulations include directions in the consideration of construction in the floodway. Section 3706 of said regulation states: “Construction which results in increased flood heights or velocities, or cause pollution, erosion, sedimentation, fire hazards, other hazards, or nuisances is prohibited.” Consequently, prior to any construction, RSP would need to bring in fill material, remove a significant number of trees, and grade the site. For these reasons, Alternative Site 2B was dismissed from further consideration.

#### **2.3.4.3 Alternative Site 2C – Midfield**

This alternative site is located adjacent to Beltline Road, southwest of the South Cargo Apron and south of Runway 7L/25R (see Figure 2-5). The site is currently an undeveloped site located within the airport perimeter fence within the midfield area of the airport. This area encompasses approximately 37 acres.

The area is planned for expansion of cargo facilities as well as the future development of general aviation facilities. Use of this site for the proposed project would negatively affect the potential for future aviation development. For these reasons, Alternative Site 2C was dismissed from further consideration.

#### **2.3.4.4 Preferred Alternative Site – Southeast Quadrant**

RSP’s preferred alternative involves the redevelopment of the southeast quadrant of the airport property to accommodate up to a 20-megawatt PV solar energy facility, as identified in Section 2.2 of this EA. The southeast quadrant encompasses a 70-acre site that would be leased by the GRAA to RSP to develop and operate the new solar facility (see Figure 2-5). Because there is limited developable space to the west due to the existing floodplain and wetlands, RSP proposes to maximize use of the site and has designed the proposed facilities accordingly.

Given the close proximity of the preferred alternative to the approach to Runway 1 and its location within the 100-year floodplain, this site would not be practicable for future airport development. However, the solar facility would be a compatible use at this location since the elevation of the solar arrays and supporting equipment would be well below the runway approach zone. This location currently has little value for aviation-related uses due to height restrictions and separation from the airport by the Kishwaukee River, and would provide the airport with a new revenue source via the lease. Section

511(a)(9) of the *Airport and Airway Improvement Act of 1982* (AAIA) and Grant Assurance 24 requires airports to be as self-sustaining as possible. Such a leasing arrangement with RSP would help the airport meet its obligation of the AAIA. The 70-acre site is a relatively flat, undeveloped site located outside the airport's perimeter fence, and requires limited tree removal. Since this site is located outside the airport perimeter fence, no airfield access would be required for construction, operations, and/or maintenance staff for the proposed project.

The footprint of the proposed project site, as presented to RSP originally, included potential development within wetlands areas. Based on the wetlands delineation conducted by RSP during preparation of this EA, the preferred site was reconfigured to avoid construction that would potentially impact wetland areas.

#### **2.3.4.4.1 Site Selection Process**

The Rockford Global Green Initiative (Appendix H- "Wanxiang & City of Rockford- Developmental Agreement") is the driving force behind the proposed solar project that is analyzed in this EA. When Wanxiang America Corporation began looking for a location to site its new manufacturing facility, the City of Rockford offered numerous incentives to Wanxiang. This incentive package included lease options for land that would accommodate up to a 20 MW solar array. Under the Rockford Global Green Initiative, locations considered for the proposed solar project were limited to sites owned or leased by the City of Rockford.

The proposed location in the southeast corner of the airport, owned by GRAA, was approved by the Rockford City Council and Rockford Economic Development Council on November, 19, 2009 (Appendix A - "Meeting Minutes") for the following reasons:

- GRAA owns the proposed site, which they have determined through their alternative analysis is a suitable site for a solar array and such use compatible with other airport activities;
- GRAA is an identified partner with the City of Rockford and Winnebago County in promoting the Rockford Global Green Initiative;
- The proposed solar field is compatible with GRAA development plans for the area;
- The proposed site is essentially not buildable for other uses due to floodplain issues and height restrictions; and
- An existing electrical transmission line is located immediately adjacent to the proposed site, which allows for interconnection between the proposed site and the electrical grid without requiring the construction of new transmission lines.

### **3. AFFECTED ENVIRONMENT AND ENVIRONMENTAL IMPACTS**

This chapter of the EA examines the potential environmental impacts of the proposed project and the No-Action Alternative for the following resource areas: aesthetics and visual resources; noise; occupational and public health and safety; waste and hazardous materials; geology and soils; land use; air quality; water resources; biological resources; historical and cultural resources; socioeconomic and environmental justice; transportation; and utilities and materials.

#### **3.1 No-Action Alternative**

Under the No-Action Alternative, DOE would not authorize the use of Federal funds for the proposed project. As a result, the project could be delayed until the company could identify other funding sources. The project could also be abandoned if other funding sources could not be obtained. If the project was delayed or abandoned, reductions in future use of fossil fuel use would not occur and DOE's ability to achieve its objectives for renewable energy would be impaired. The jobs created by construction and installation of the solar field would not be realized and the local area would forego the economic benefit associated with these new jobs. The Chicago Rockford International Airport would not receive the lease payment for the solar farm site.

If the project did proceed without DOE's financial assistance, the potential impacts would be essentially identical to those under DOE's Proposed Action (that is, providing assistance that allows the project to proceed). To allow a comparison between the potential impacts of a project as implemented and the impacts of not proceeding with a project, DOE assumed that if it decided to withhold assistance from this project, final design and construction of RSP's proposed project would not proceed and 7 million kilowatt-hours of electricity would not be generated with renewable energy. Potential impacts to geology, land use, air quality, water resources, biological resources, historic and cultural resources, and transportation would not occur.

#### **3.2 Rockford Solar Partner's Proposed Project**

The proposed project could potentially impact the environmental resources on and near the project site and region. The following sections describe the potential environmental impacts for each environmental resource area.

##### **3.2.1 RESOURCE CONSIDERATIONS NOT CARRIED FORWARD FOR FURTHER ANALYSIS**

Table 3-1 presents DOE's evaluation of resource areas that it did not carry forward for further analysis. In an effort to focus the analyses on resource categories commensurate with their importance in relation to the proposed project, DOE limited the evaluations of these resource areas according to the sliding-scale approach. This sliding-scale approach is consistent with NEPA regulations (40 CFR 1502.2(b)), under which impacts, issues, and related regulatory requirements are investigated and addressed with a degree of effort commensurate with their importance. DOE concluded that the proposed project would result in no impacts, minimal impacts, or temporary impacts, to the following resource areas and did not carry them forward to more detailed description and analyses. Section 3.2.2 presents the consideration carried forward for further analyses.

**Table 3-1. Environmental Resource Areas with No, Minimal, or Temporary Potential Impacts**

Environmental Resource Areas	Impact Considerations and Conclusions
<b>3.2.1.1 Aesthetics and Visual Resources</b>	The project components would be of heights varying from 4' to 7.5' above ground surface and would not likely be visible at receptor locations (residents) present in the general vicinity. Properties adjacent to the proposed project are primarily agricultural, wetlands, and those utilized by the Chicago Rockford International Airport and owned by GRAA. There are two businesses slightly north-northeast of the property that will be able to see the north end of the site, there are no residences located within the immediate viewshed of the proposed project. DOE has determined the proposed project's impact on visual resources would be negligible.
<b>3.2.1.2 Noise</b>	<p>The proposed project area is immediately surrounded by a railroad right-of-way to the east, industrial plants on the north at Beltline Road, and the Chicago Rockford International Airport on the west and north. The Winnebago County Forest Preserve District owns the Kilbuck Bluffs Forest Preserve south of the property project. Existing noise sources in the surrounding area include cars, trucks, buses, trains, airplane landings and take-offs, and industrial operations. The closest sensitive receptors are homes approximately 0.5 mile from the eastern site boundary.</p> <p>Construction activities would temporarily contribute to the ambient noise levels for a period of approximately 11 months. The noise sources would be from typical construction vehicles. Estimated noise levels during construction would be about 42 A-weighted decibels at 0.5 mile, the nearest offsite receptor location.</p> <p>DOE expects that noise levels during operations would be negligible, temporary, and related to the occasional presence of vehicles and construction equipment during maintenance and repair activities.</p>
<b>3.2.1.3 Occupational and Public Health and Safety</b>	<p>Potential health and safety issues would be limited to standard construction hazards; the proposed project would not affect offsite personnel or facilities, and impacts related to occupational health and safety would be minimized by appropriate planning and safeguards.</p> <p>Because the proposed site is on airport property, panel reflectivity was considered. Glint and glare are potential impacts associated with solar panels. The solar panels that would be installed as part of this project would be constructed of dark, light-absorbing materials and covered with an anti-reflective coating. Panels of this design would reflect less than 2 percent of the incoming sunlight. Therefore, DOE does not anticipate impacts associated with glint or glare.</p>
<b>3.2.1.4 Waste and Hazardous Materials</b>	Waste generation would be typical of construction projects and would not be substantial. Waste would include general debris (to be disposed of at the Winnebago Reclamation Services landfill), trees (to be disposed of at a nearby composting facility), and minor quantities of used oil and lubricants associated with construction equipment (which would be removed by a licensed disposal contractor). No demolition waste would be generated. Limited amounts of waste would be generated during operations and would primarily be standard waste generated by routine maintenance.
<b>3.2.1.5 Intentional Destructive Acts</b>	The effects of intentional destructive acts would be limited to damage to equipment and/or personnel resulting from the acts themselves. The nature of construction and/or operating activities would not amplify the impacts of such acts nor be a target for such acts.

## 3.2.2 CONSIDERATIONS CARRIED FORWARD FOR FURTHER ANALYSIS

### 3.2.2.1 Geology and Soils

#### Affected Environment

Soil maps obtained from the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) Web Soil Survey show eight soil types within the project area (NRCS 2010). Two of the eight soil types are hydric, which covers approximately 6 acres of the site. Hydric soils have sufficiently wet conditions throughout the year to support the growth and regeneration of vegetation that grows partially or fully under water.

Approximately 5 acres of the proposed project site is prime farmland. Approximately 54 acres of the site is considered important farmland. Prime farmland is defined in part as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses. "Congress enacted the *Farmland Protection Policy Act* (FPPA) as a subtitle of the 1981 Farm Bill. The purpose of the law is to "...minimize the extent to which Federal programs contribute to the unnecessary conversion of farmland to nonagricultural uses..." (P.L. 97-98, Sec. 1539-1549; 7 U.S.C. 4201 *et seq.*). The FPPA also stipulates that Federal programs be compatible with State, local, and private efforts to protect farmland".

The project site primarily consists of a relatively level area. Elevations within the site range from approximately 690 to 720 feet above mean sea level. Seismic activity in Winnebago County is not considered a substantial hazard, as the majority of seismic activity (81 percent) in Illinois occurs in southern Illinois.

#### Environmental Impacts

Construction of the proposed project would disturb approximately 70 acres of land, including the addition of multiple areas of impervious (concrete) surface. Construction of the following support features would result in a slight increase in impermeable surfaces over a total of approximately 12,890 square feet (0.3 acre): 32 concrete equipment pads, each about 270 square feet supporting solar array inverters and transformers; a 250-square-foot equipment pad supporting a switchgear equipment building; a 2,500-square-foot concrete equipment pad for the 33 Million Volt Amperes (MVA) step-up transformer; and a 2,000-square-foot maintenance building. Current plans for site grading would maintain the existing grade where possible and leave topsoil in place. No fill material would be brought in from offsite. No fill material would be removed from the project site.

Erosion and run-off would be managed through the use of best management practices (BMPs) as required and by following requirements set forth in RSP's NPDES Permit during construction activities. IDOT's Standard Specifications for Construction of Airports, Section 156-3.6 would also be incorporated into the construction documents. BMPs would include at a minimum the following: containing excavated material, use of silt fences, protecting exposed soil, stabilizing restored material, and re-vegetating disturbed areas. The potential for offsite flow of sediment associated with storm water would also be regulated by Winnebago County grading and drainage requirements. Areas disturbed during construction would be re-vegetated using local non-wildlife attracting native species.

### 3.2.2.2 Land Use

#### Affected Environment

The proposed 70-acre solar farm would be located within the boundaries of the Chicago Rockford International Airport. The proposed project site is zoned for industrial use but is currently being used for agricultural purposes on airport property.

Beltline Road borders part of the proposed site to the north, and industrial plants are located beyond approximately 500 feet north and 620 feet northeast of the proposed site boundary. Also north of the project site is the Chicago Rockford International Airport, and the proposed facility would be located on 4 percent of the GRAA's total land area at the airport. A railroad track and vacant farmland are located directly to the east, and Baxter Road is to the south of the site. Kilbuck Bluffs Forest Preserve is approximately 2,000 feet to the west of the site. Onsite land use consists of open space and agricultural areas. Agricultural plants within the site include soybean fields in the central portion of the project site and a corn field in the eastern portion of the project area.

While the project site is currently used for agricultural purposes, it is zoned Industrial-2 (I-2) by the City of Rockford, which designates heavy industrial districts. The area of the proposed site is approximately 4 percent of the GRAA's total land area.

Figure 3-1 presents a 2009 aerial photograph of the proposed site and surrounding areas, including Winnebago County zoned land uses:

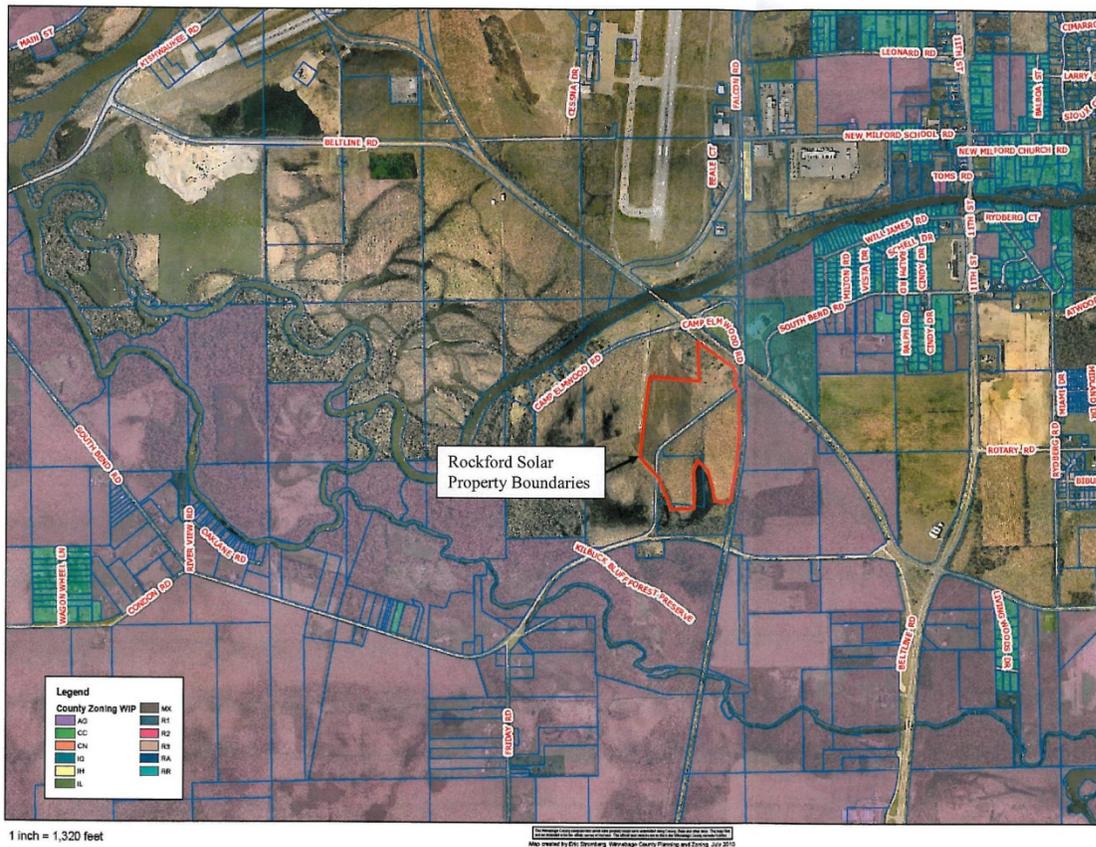


Figure 3-1. Land Use Within 1 Mile of Proposed Project Site

## Environmental Impacts

Land use within the proposed project site would change from agricultural land uses to groups of fenced solar arrays. The proposed use of the land is consistent with the areas I-2 zoning. Construction and operation of the proposed project would not change the type of activities/operations performed at other areas of the Chicago Rockford International Airport or other offsite areas. Implementation of the Proposed Project would permanently commit 70 acres of previously disturbed land.

### 3.2.2.3 Air Quality

#### Affected Environment

The *Clean Air Act* requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards for the six common air pollutants. The criteria pollutants are particulate matter, (PM<sub>10</sub> and PM<sub>2.5</sub>), ozone, sulfur dioxide, nitrogen oxides, carbon monoxide, and lead. The Rockford region is in compliance for all criteria pollutants, which means that the levels of these pollutants in the air are below the EPA standards and air conformity rules do not apply.

#### Greenhouse Gases (GHGs)

Ongoing climate change research was summarized in reports by the United Nations Intergovernmental Panel on Climate Change, *U.S. Climate Change Science Program's Science Synthesis and Assessment Products* and *U.S. Global Change Research Program*. These reports concluded that the climate is already changing; that the change would accelerate; and that manmade GHG emissions, primarily carbon dioxide, are the main sources of accelerated climate change (DOE 2009).

DOE used the EPA's eGRID Website calculator to determine that conventional means of producing 20 megawatts of energy in this particular region would emit approximately 174,575 U.S. tons of carbon dioxide per year (EPA 2008). The proposed project would provide approximately 7 million megawatt-hours of renewable energy over the 20-year life of the project that would otherwise be generated by conventional means.

#### Environmental Impacts

Exhaust from construction, worker, and material delivery vehicles, as well as other equipment used during construction (e.g., portable electrical generators) would result in localized, short-term increases in emissions (e.g., carbon monoxide, sulfur dioxide, particulate matter, methane, carbon dioxide, and nitrogen oxides). Airborne dust (PM<sub>2.5</sub> and PM<sub>10</sub> emissions) could potentially be generated from excavation and vehicular traffic on unpaved surfaces. Airborne dust generation would be controlled using BMPs, such as spraying water on soil surfaces and installing stabilized rock construction entrances, to minimize the potential release and exceedance of these pollutant thresholds (PM<sub>2.5</sub> and PM<sub>10</sub>).

Current plans for site grading would maintain the existing grade where possible and leave topsoil in place. Reducing grading actions would minimize airborne dust.

All construction will be performed in accordance with the "Illinois Standard Specifications for Construction of Airports – State of Illinois – Department of Transportation – Division of Aeronautics – Effective Date April 1, 2010". Division V of the document, "Turbing– Item 901 Seeding" addresses the restricted use of non-wildlife attracting groundcover post construction. In accordance with these specifications, RSP would plant native short-growing shade-tolerant grass species specified by USDA as non-wildlife attractant species for ground cover below the solar arrays to minimize fugitive dust

emissions and attracting wildlife. When operational, the solar PV array facility would not be a source of any criteria pollutants.

**GHGs**

The temporary increase in vehicle exhaust emissions during construction would result in a minimal contribution to increased GHG emissions. Solar technologies offset emissions from conventional methods, which would be a beneficial impact to the regional air quality; therefore, the proposed 20-megawatt solar array would have a beneficial impact on overall GHG emissions by producing electricity with near-zero carbon dioxide emissions.

The Illinois Climate Change Advisory Group estimated the approximate contribution of each source to electricity generated for the Illinois market in 2005 as follows (ICCAG 2007):

- Nuclear 47.8 percent
- Hydroelectric 0.2 percent
- Gas/Oil 3.9 percent
- Coal 47.3 percent
- Landfill Gas/EFW 0.5 percent
- Wind 0.2 percent
- Other 0.1 percent

Over an estimated 30-year life of the proposed project, approximately 5.25 million tons of carbon dioxide from conventional means of production would be avoided. The proposed project would have an overall beneficial impact on GHG emissions.

**3.2.2.4 Water Resources**

This section discusses groundwater, surface water, floodways and floodplains, and wetlands.

**Affected Environment**

**Groundwater**

The deep glacial outwash and underlying Cambrian aquifers of the Rock and Kishwaukee River Valley are the main sources of water for the larger industries and municipalities in Winnebago County. Across the proposed project area, the water table ranges from 0 to 2 feet below the surface. No wells are located on the proposed site.

**Surface Water**

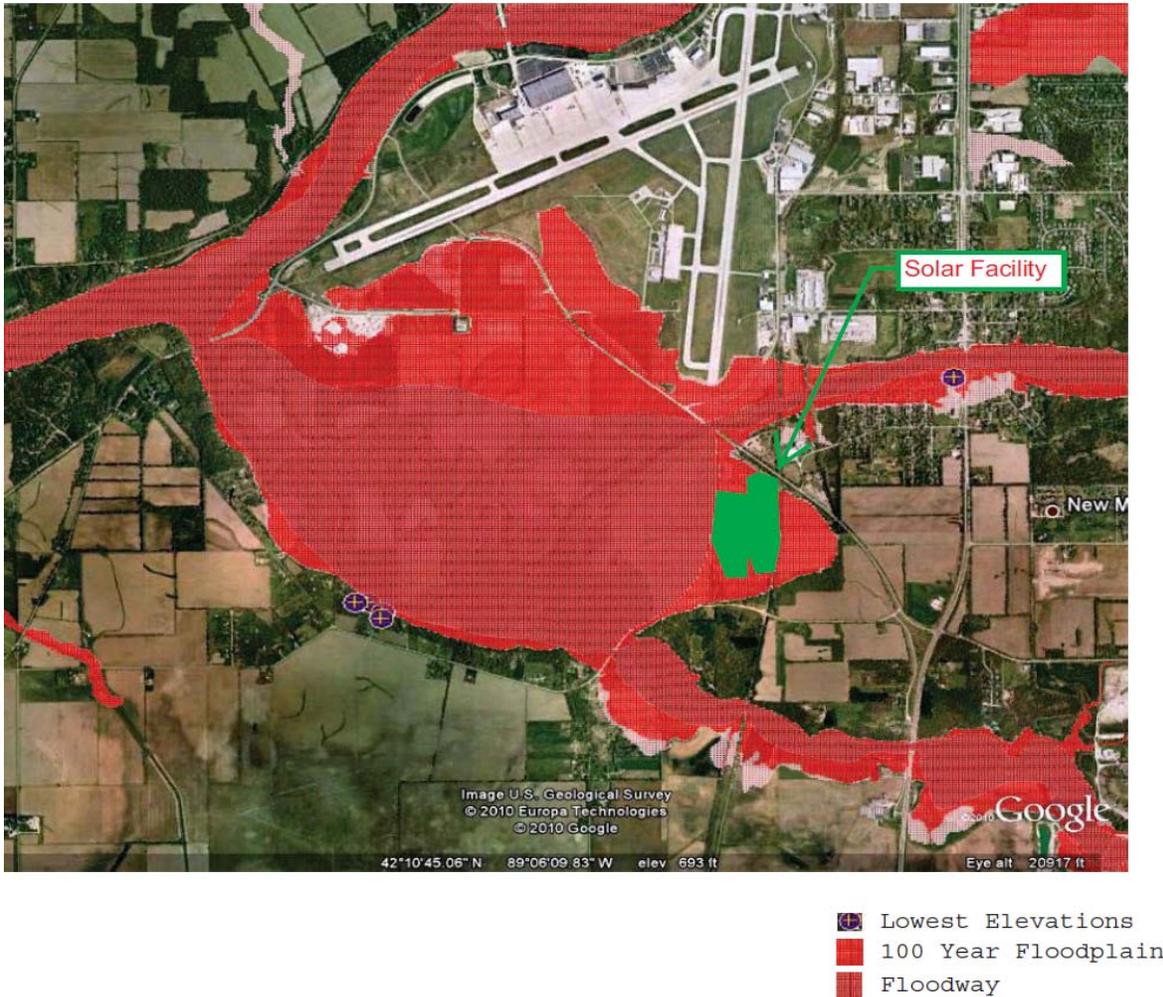
Two rivers (the Rock and Kishwaukee) and several creeks flow through Winnebago County. Rock River flows through the center of the county and the City of Rockford. The Chicago Rockford International Airport is located at the confluence of the Rock and Kishwaukee rivers in the southern part of the county. Rock River flows north to south, the Kishwaukee flows southwest; both rivers are located immediately northwest of the proposed project site. At its closest point, the northern boundary of the proposed project site is 0.10 mile southeast of the Kishwaukee River. Northern portions of the project site drain north toward the Kishwaukee River; southern portions of the project area drain south toward Kilbuck Creek and an intermittent stream.

**Floodways and Floodplains**

The proposed project site is close to the Kishwaukee River floodway, which is slightly west and north of the project site. The floodway was identified using [FEMA's Flood Insurance Rate Maps](#) and was used to produce Figure 3-2. The proposed project was designed specifically to avoid siting within the floodway.

A Preliminary Floodplain/Wetland Assessment (Appendix B) was prepared in accordance with 10 CFR Part 1022, “Compliance with Floodplain/Wetlands Environmental Review Requirements” for the purpose of fulfilling DOE’s responsibilities under Executive Order 11988, “Floodplain Management” and Executive Order 11990, “Protection of Wetlands.”

Executive Order 11988 encourages measures to preserve and enhance the natural and beneficial functions of floodplains. It also requires Federal agencies to avoid, to the extent possible, any long and/or short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development whenever there is a practicable alternative.



**Figure 3-2. Proposed Project Site Showing the Kishwaukee River Floodway**

**Wetlands**

Executive Order 11990 requires Federal agencies to minimize the destruction or degradation of wetlands, and to avoid undertaking new construction located in wetlands unless they find there is no practicable alternative to such construction. RSP used the USFWS National Wetlands Inventory to identify wetlands within and near the proposed project site. Four wetlands were identified in the vicinity of the project site; therefore, RSP commissioned a wetlands delineation study to more precisely identify the extent of the wetlands. As a result of this study, RSP reconfigured the project footprint to avoid disturbance of wetlands.

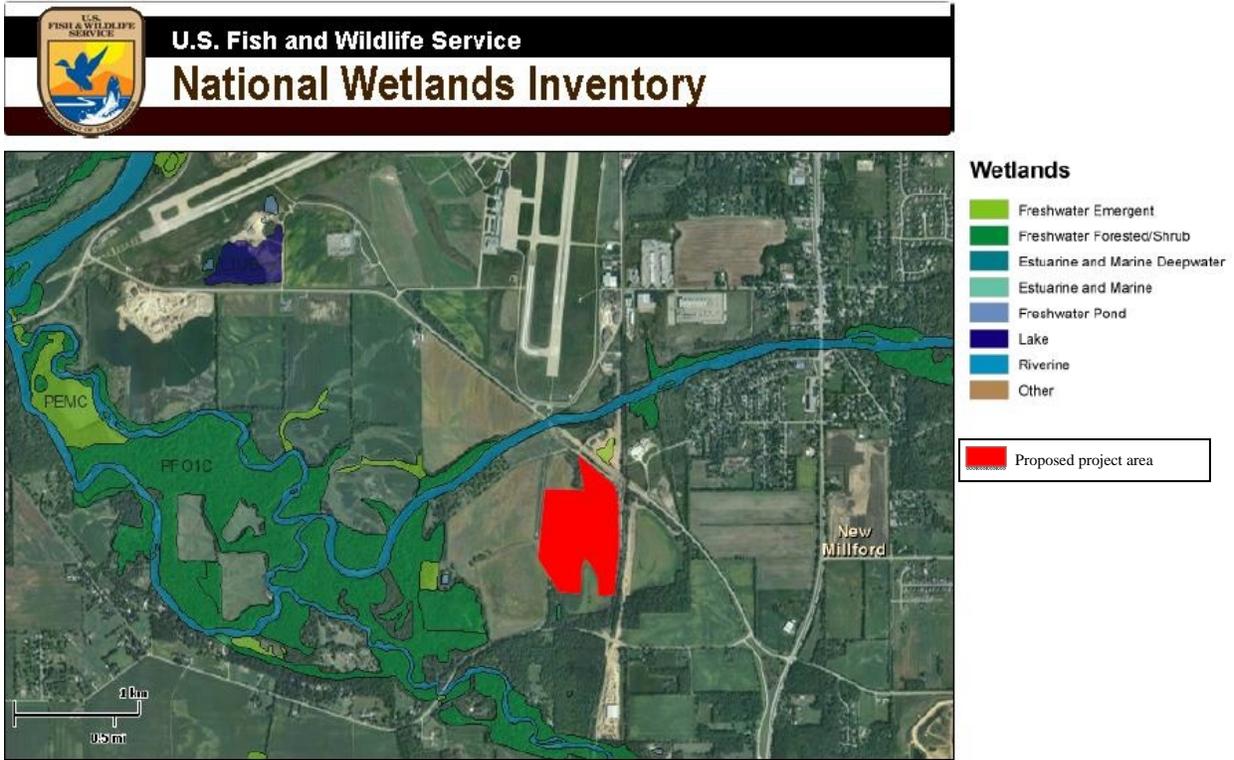


Figure 3-3. Wetlands Within and Near the Project Site (USFWS Wetland Mapper)

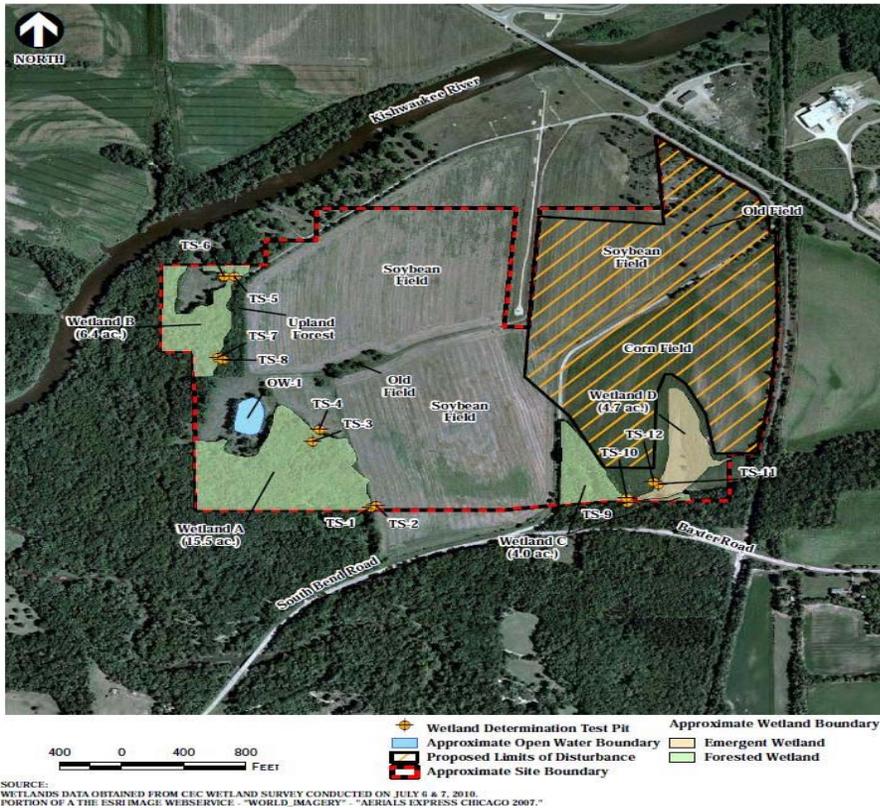


Figure 3-4. Wetlands Within and Near the Project Site (Wetland Delineation Report)

## **Environmental Impacts**

### ***Groundwater***

The proposed project is not expected to impact any groundwater resources. No groundwater wells would be installed, as the project would utilize existing city infrastructure. If structural features associated with the abandoned wells were encountered during construction activities, they would be removed in accordance with all local, State, and Federal standards. Overall rainwater infiltration and groundwater flow conditions would not be affected during construction or operations.

Construction of the following support features would result in a slight increase in impermeable surfaces over a total of approximately 12,890 square feet (0.3 acre): 32 concrete equipment pads, each about 270 square feet supporting solar array inverters and transformers; a 250-square-foot equipment pad supporting a switchgear equipment building; a 2,500-square-foot concrete equipment pad for the 33 Million Volt Ampere (MVA) step-up transformer; and a 2,000-square-foot maintenance building.

The addition of a small amount of discontinuous impervious surfaces (0.3 acre) in comparison with the total proposed project (70 acres), roughly 0.4 percent of the area would increase the potential for runoff. Because of this minimal increase to existing conditions, DOE does not anticipate adverse impacts to water infiltration.

### ***Surface Water***

Impacts to surface water in the proposed project site are anticipated to be minimal. During construction, storm water and silt runoff from project areas would be managed in accordance the NPDES permit and with the pollution prevention plan prepared by RSP under a General Storm Water Permit for Construction Activities. Examples of pollution prevention measures include the use of standard erosion control mechanisms such as silt fencing and stabilized rock construction entrances. After installation, native vegetation in the form of a low-growing ground cover would be planted under and around the solar arrays to minimize the potential for soil erosion during operation.

Existing drainage ditches from past agricultural use would aid in managing storm water discharges from the area. The surface contour and the potential tie-in of the proposed project with these ditches would be reviewed by Illinois EPA to determine the need for other storm water management methods, such as installation of culverts, water control structures (e.g., gated weir), and open channel flow measuring devices (e.g., Parshall Flume) for estimating flows. This review would also evaluate the need for establishing a new storm water outfall under an NPDES permit. All site runoff would be managed in accordance with the pollution prevention plan prepared under that permit.

The addition of a small amount of discontinuous impervious surfaces (0.3 acre) in comparison with the total proposed project (70 acres), roughly 0.4 percent of the area would only minimally; if at all contribute to an increase in the potential for runoff. Because of this minimal increase to existing conditions, DOE does not anticipate adverse impacts to surface water.

### ***Floodways and Floodplains***

The overall impact of the proposed project on floodways and floodplains is anticipated to be minimal. As a result of the floodplain assessment conducted during initial project planning, plans for developing the project site was reconfigured and the site moved east to avoid any construction or operating activities from occurring within the floodway. However the entirety of the proposed project is located within the 100-year floodplain. Though some impermeable surfaces would be constructed, such surfaces would amount to only 0.3 acre, or approximately 0.4 percent of the total project area. Therefore, DOE does not anticipate that the proposed project would adversely affect the ability of the land to respond to flood conditions or increase the frequency or severity of flooding associated with the Kishwaukee River.

### **Wetlands**

During initial planning for the proposed project, a wetland delineation was completed, and the boundaries of the project site were reconfigured to the Northeast to avoid any disturbance to wetlands. Grading of the site would be minimal (approximately 5 acres), and existing surface water flow conditions would be maintained to the maximum extent practicable; therefore, RSP does not anticipate changes in the flow of water or sediment transport to the wetlands. The use of BMPs and the construction of storm water controls would be in place to protect nearby wetlands. Based on the lack of direct or indirect impacts to wetlands, DOE determined that *Clean Water Act* Section 404/401 permits would not be necessary for construction of the proposed project. DOE further anticipates the proposed project would result in no impacts to wetlands.

### **3.2.2.5 Biological Resources**

#### **Affected Environment**

RSP conducted a Threatened and Endangered Species and Habitat Assessment of the proposed project on August 20, 2010 (Appendix F). The report summarizes the project site's existing conditions and potential impacts of the proposed project to flora and fauna in the area.

#### **Flora**

The project site primarily consists of active agricultural row crop fields. Areas of old field with scattered trees occur within the northeastern and western portions of the project area. Old field vegetation with scattered trees, upland deciduous forest, palustrine forested wetland, and palustrine emergent wetland are also present in the vicinity of the site, but are not within the bounds of the project site.

Agricultural plants within the project site include soybean (*Glycine max*) fields in the central portion of the project site and a corn (*Zea mays*) field in the eastern portion of the project area.

#### **Fauna**

Wildlife occurring on the project site includes mammals, reptiles, and birds commonly native to all areas of the state of Illinois. Species most associated with active farmland and old field habitats include small rodents and other small mammals, deer, songbirds, carrion birds, and raptors.

#### **Threatened and Endangered Species**

The USFWS (2011) lists the following Federally listed endangered and candidate species as occurring or potentially occurring in Winnebago County:

- Indiana bat (*Myotis sodalis*, endangered): Summer Indiana bat roosting and foraging habitat consists primarily of floodplain and riparian forests, though recently it has been found that upland forests are also used by Indiana bats for roosting.
- Eastern prairie fringed orchid (*Platanthera leucophaea*, threatened): Primary habitat includes mesic tallgrass prairies, sedge meadows, fens, lakeshores, and sphagnum bogs.
- Prairie bush clover (*Lespedeza leptostachya*, threatened) : Primary habitat includes tallgrass prairies with soils that may be either deeply underlain by till or sand, gravel, or rocks, most often including limestone, but also including sandstone, gneiss, or quartzite.

There are no known occurrences of Federally listed species within the boundaries of the proposed project site or vicinity. However, the Indiana bat is known to occur within Winnebago County and there are trees suitable for the Indiana bat within the project site. A tree survey on the property included in Appendix E revealed the presence of two trees that could be suitable for use by the Indiana bat during the summer maternity season. Based on consultation with USFWS, this project is not likely to adversely affect the

Indiana bat, provided that the suitable Indiana bat roost trees are cleared outside of the maternity season (April 1 through September 30), or after emergence and visual surveys have been conducted.

Suitable habitat for several State-listed species is present in some parts of the project site; however, only one State-listed species, the upland sandpiper, has been documented in the vicinity, with the last reported occurrence in Winnebago County observed in 1988. The proposed site does not contain typical habitat for the upland sandpiper (CEC 2010). Potentially suitable habitat for the following state-listed species is present within the Proposed Project Area: Indiana bat, daisy-leaf grape fern, northern grape fern, and loggerhead shrike. The IDNR EcoCAT search resulted in no records of federally-listed, proposed, or candidate species having been documented within the vicinity of the proposed project.

## **Environmental Impacts**

### ***Flora***

The proposed project would involve removal of existing agricultural crops, scattered trees, and old field vegetation. Following completion of construction, RSP would establish low-growing native grasses throughout the project site. Species were selected to limit interference with airport operations and include Red Top, Timothy, and Red Clover. Because native species are present only in limited areas on the site, impacts to surrounding native vegetation are anticipated to be minimal.

### ***Fauna***

10 foot fencing around the perimeter of the proposed project would deter entry of deer and other larger migrating animals, allowing understory vegetation to mature and seed, providing improved habitat for native species. The proposed fencing would also support movement of small animals, such as reptiles and amphibians. Fencing would be located at a minimum distance of approximately 170 feet from local roads, and therefore would not likely cause hazards to the animal or to automotive traffic along S. Bend and Beltline roads. While deer frequent agricultural areas and have been known to eat agricultural plants, they are not necessarily dependent upon them. It is not anticipated that the proposed project would increase stress on surrounding forests from foraging, as no woodlands and/or wetlands accessible to deer post-construction would be substantially altered; it is unlikely that the change in deer foraging habitat would be substantial. The potential for habitat fragmentation to occur for deer and/or other medium-sized animals is low, as the fenced area can be readily circumnavigated. This displacement is anticipated to have minimal impacts to their populations at large.

The proposed tree clearing is anticipated to have a minimal impact on migratory birds, given the presence of numerous other existing trees closer to Kishwaukee River for foraging raptors. Construction noise has the potential to disturb nesting birds.

### ***Threatened and Endangered Species***

Trees suitable for Indiana bat habitat occur within the site boundary. In a letter dated October 2010, the USFWS advised that in order to reduce the potential for take of Indiana bats, potentially suitable Indiana bat roost trees within the project area would be required to be removed during the October 1 to March 31 time period. A walking survey of the area was conducted and it identified two trees that meet the criteria for suitable Indiana bat roost trees within the project area. The rest of the trees to be cleared do not have these characteristics. These two trees will be cleared out of season, or cleared after a bat emergence survey of the trees indicates that they have not been inhabited by bats for two consecutive nights. According to USFWS, the project is not likely to adversely affect the Indiana bat, provided that the suitable Indiana bat roost trees are cleared outside of the maternity season (April 1 through September 30), or after emergence and visual surveys have been conducted.

### 3.2.2.6 Historic and Cultural Resources

#### Affected Environment

Chicago Rockford International Airport was originally developed as Camp Grant, a military training facility, in 1917. Camp Grant operated from 1917 through 1946. The GRAA began operating at this site in 1946. Although the GRAA currently owns the land upon which the proposed project would be located, it was not originally part of Camp Grant.

The NHPA is the primary Federal law protecting cultural, historic, American Indian, and Native Hawaiian resources. Section 106 of the NHPA (36 CFR Part 800) requires Federal agencies to assess and determine the potential effects of their proposed undertakings on prehistoric and historic resources (for example, sites, buildings, structures, and objects) and to develop measures to avoid or mitigate any adverse effects. Compliance with Section 106 requires consultation with the SHPO.

On August 28, 2009, DOE executed a Memorandum authorizing its Recovery Act grant applicants under the Energy Efficiency and Conservation Block Grants, Weatherization, and SEP programs to initiate Section 106 consultations pursuant to 36 CFR 800.2(c)(4)(DOE 2009). On May 6, 2010, the Illinois Programmatic Agreement was executed with DOE, which further solidified a recipient's ability to initiate consultation with the SHPO. As of that date, applicants and their authorized representatives could consult with the SHPOs and Tribal Historic Preservation Officers to initiate the review process established at 36 CFR Part 800.

RSP conducted a Phase I Archaeological Investigation for the proposed development (Appendix G). RSP identified no archaeological material onsite and recommended project clearance to IHPA.

#### Environmental Impacts

RSP submitted the Phase I Archaeological Investigation to the IHPA for review on September 27, 2010; IHPA subsequently issued a concurrence letter for the Phase I Archaeological Investigation. In conducting its evaluation, IHPA considered the potential impacts to archaeological resources within the footprint and immediate vicinity of the proposed project area. The Agency also analyzed the potential impacts to the character of the physical features that contribute to historic significance and integrity of significant historic features of properties listed in or potentially eligible for listing in the *National Register of Historic Places*. The IHPA concurrence letter states:

“The Phase I survey and assessment of the archaeological resource appear to be adequate. Accordingly, we have determined, based upon this report, that no significant historic, architectural, and archaeological resources are located in the project area.”

Based on the Phase I Archaeological Investigation of the project area, no impact to any archaeological sites is anticipated. If archaeological resources were encountered during construction, ground-disturbing activities would cease, and construction personnel would contact the IHPA for resolution and further instruction regarding additional studies and/or potential mitigation measures required in accordance with the NHPA.

According to “Indian Entities Recognized and Eligible to Receive Services” from the U.S. Bureau of Indian Affairs in 72 FR 13648 dated March 22, 2007, there are no Federally recognized tribes in the state of Illinois. There are also no State-recognized tribes within Illinois. However, the IHPA provided DOE with a list of tribes with an historic presence in various regions of Illinois (Appendix C). DOE utilized this list to determine the relevant tribes within the area of potential effects of the proposed project. DOE

provided the tribal contacts with the Notice of Availability for the Draft EA and associated 30-day comment period. Tribal contacts can be found within the project’s stakeholder list (Appendix A).

**3.2.2.7 Socioeconomics and Environmental Justice**

**Affected Environment**

**Socioeconomics**

Winnebago County is part of the Rockford Metropolitan Statistical Area. The County’s estimated population of 353,722 people in 2009 reflects an approximate 10.5 percent rise in population since the 2000 Census recorded 320,204 people. The population of the city of Rockford was estimated to be 157,272 people in 2008. In 2008, approximately 31.6 percent of Rockford’s population consisted of minorities. Per capita income in Rockford, Illinois in 2010 is \$23,907.

Unemployment in Rockford, IL dropped to 10.6% in May 2011. Employment in Rockford, Illinois in 2010 is broken down as follows:

2010 Employment by Job Type for Civilian Population (Age 16+)	Rockford, IL		Illinois		United States	
	Count	Percentage	Count	Percentage	Count	Percentage
White Collar	41,430	69.75%	4,032,548	75.39%	92,009,214	74.72%
Blue Collar	17,964	30.25%	1,316,663	24.61%	31,125,749	25.28%
<b>Management, Business, and Financial Operations</b>	9,335	13.64%	1,042,813	17.01%	23,044,053	16.09%
<b>Professional and Related</b>	14,232	20.79%	1,325,939	21.63%	31,190,648	21.78%
<b>Sales and Office</b>	17,863	26.09%	1,663,796	27.14%	37,774,513	26.38%
<b>Service</b>	8,974	13.11%	769,017	12.54%	19,324,452	13.50%
<b>Farming, Fishing, and Forestry</b>	90	0.13%	12,508	0.20%	727,249	0.51%
<b>Construction, Extraction, and Maintenance</b>	4,804	7.02%	472,006	7.70%	12,677,154	8.85%
<b>Production, Transportation, and Material Moving</b>	13,160	19.22%	844,657	13.78%	18,448,595	12.88%

Source: www.clrsearch.com

**Environmental Justice**

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” directs Federal agencies to address environmental and human health conditions in minority and low-income communities. The evaluation of impacts to environmental justice is dependent on determining if high and adverse impacts from the proposed project would disproportionately affect low-income or minority populations in the affected community.

DOE has determined that a 1-mile radius around the project boundary would be sufficient for the purpose of an environmental justice analyses. Based on 2009 estimates, 13,460 persons live within 1 mile of the proposed project site. The estimated percentage of minority population within 1 mile of the site boundaries is approximately 8 percent (Cubit 2010a). The aggregate percent of racial minorities in the state of Illinois is 21 percent.

## **Environmental Impacts**

### ***Socioeconomics***

The total value of the Rockford Solar Energy Project is estimated at \$127 million. The Recovery Act SEP grant is estimated at about \$4 million. The grant and the project would directly impact the local and regional economies. Indirect economic benefits would also be temporarily realized through increased personal spending, wages, and the spending of non-local workers during their stay in the area.

The proposed project would require a workforce of approximately 89 full-time employees during the construction phase of approximately 11 months and 3 to 5 full-time operations and maintenance managers and staff. The production of solar panels in the newly constructed Wanxiang manufacturing facility located in the Rockford Global Trade Park adjacent to the Chicago Rockford International Airport would require up to 300 temporary employees during the anticipated expansion of production. Approximately 10 percent of these temporary employees would be expected to transition to permanent employment. These employees are expected to come from the greater Rockford area.

In addition, RSP would provide all project management, equipment procurement, and construction services through a network of local manufacturers. The project would comply with the Davis-Bacon Act, adhere to a “Buy American” philosophy, and maximize the use of local construction firms.

### ***Environmental Justice***

Based on the analyses presented in this EADOE determined that no high and/or adverse impacts would occur to any member of the surrounding community, or minority or low-income-populations.

## **3.2.2.8 Transportation, Utilities and Infrastructure**

### **Affected Environment**

During construction, panels, materials, and equipment would be brought to the site via a new gravel access road from South Bend Road. No fill material would be brought to or taken from the site. Trucks carrying waste from tree clearing would periodically enter and leave the site. There are no existing structures located on the proposed project site. The nearest municipal water line runs generally along the east border of the proposed site, along the railroad tracks. Water for cleaning panels would be obtained from this line.

### **Environmental Impacts**

The alternating current output capacity of a 20-megawatt solar power supply can serve approximately 2,200 homes per year. Electrical energy would be delivered to PJM Interconnection LLC, a regional transmission organization that is part of the Eastern Interconnection grid via existing distribution lines.

It is estimated that as much as 328,000 gallons of water per year would be required for cleaning PV panels. Current plans are to use water only for cleaning; should cleaning require amended water in the future, environmentally benign materials would be used. Because this represents a minimal amount (less than 0.005 percent) of water usage for the City of Rockford, which has an annual production rate of 7.2

billion gallons of water, existing sources are considered adequate and impacts to the system would be essentially imperceptible. The Rockford Water Department obtains its water from a series of deep aquifer wells located throughout the City of Rockford. The nearest municipal water line runs generally along the railroad tracks near the eastern border of the proposed site. DOE has determined that existing transportation and housing infrastructure in the City of Rockford is adequate to accommodate the demands of the proposed action.

### **3.3 Irreversible and Irretrievable Commitment of Resources**

A commitment of resources is irreversible when its primary or secondary impacts limit the future options for a resource or limit those factors that are renewable only over long periods of time. Examples of nonrenewable resources are minerals, including petroleum. An irretrievable commitment of resources refers to the use or consumption of a resource that is neither renewable nor recoverable for use by future generations. Examples of irretrievable resources are the loss of a recreational use of an area. While an action may result in the loss of a resource that is irretrievable, the action may be reversible. Irreversible and irretrievable commitments of resources are primarily related to construction activities.

For the proposed project, resources consumed during construction of the project, including labor, fossil fuels and construction materials, would be committed for the life of the project. Nonrenewable fossil fuels would be irretrievably lost through the use of gasoline- and diesel-powered construction equipment during construction. Approximately 70 acres of land would be irreversibly committed during the functional life of the project.

### **3.4 Unavoidable Adverse Impacts**

Unavoidable adverse impacts associated with the proposed project include:

- Long-term loss of approximately 70 acres of agricultural land resulting from the construction of the solar panels, substation, and access roads
- An increase in noise levels during construction and operation

These impacts are both temporary, in the case of the construction noise, and long-term in regard to the loss of agricultural land. Overall, impacts of the proposed project on the environment and human health are minimal as described in the relevant sections in Chapter 3.

### **3.5 The Relationship Between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity**

Short-term use of the environment, as used here, is that used during the life of the project, whereas long-term productivity refers to the period of time after the project has been decommissioned, the equipment removed, and the land reclaimed and stabilized. The short-term use of the project area for the proposed project would not affect the long-term productivity of the area. If it was decided at some time in the future that the project had reached its useful life, solar panels and foundations could be decommissioned and removed, and the site reclaimed and returned to agricultural production. The installation of solar panels at this site would not preclude using the land for purposes that were suitable prior to this project.

## 4. CUMULATIVE IMPACTS

Cumulative impacts are those potential environmental impacts that result “from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 CFR 1508.7).

Rockford Solar Partner's application to the DCEO was for the development of a 20MW solar facility. The DCEO's selection process and ultimate decision to provide \$4 million dollars of Federal SEP funds to RSP was based on the 20 MW capacity analyzed in this EA. RSP has publicized their intent to develop an additional 42MW of solar production in the City of Rockford. RSP has stated this is their long-term production goal; however, there are no immediate activities towards this goal that could be analyzed in this EA. Currently, there is no Federal funding allocated for this future project or proposed use of airport property. DOE has determined that, at the present time, cumulative impacts cannot be analyzed for this potential future build-out and that any analysis would be purely speculative.

### 4.1 Reasonably Foreseeable Future Projects

DOE reviewed information on past, present, and reasonably foreseeable future projects and actions that could result in impacts to a particular resource over the same period and in the same general location as the proposed project. Past and present environmental impacts have already passed through the environment or are captured in existing baseline conditions, as identified in Section 3 of this EA. Because the proposed project would not have long-term air emissions or liquid discharges, most of the cumulative impacts would be confined to the solar facility and adjacent airport properties. Of primary importance would be planned airport operations and expansions. Reasonably foreseeable actions would be those that are in the process of being implemented, would likely receive acceptable funding levels, and have plans with sufficient detail and proposed schedules to move forward.

This section discusses several potential actions the airport includes in its 3-year Strategic Plan, as well as several other actions DOE identified through online research and personal interviews that are planned to occur in the vicinity. The following is a listing of reasonably foreseeable actions and a summary of the potential cumulative impacts.

- Falcon Road Upgrade: Work is in progress to upgrade Falcon Road on the east side of the airport. This work is expected to involve repaving of Falcon Road.
- Runway 1/19 Upgrade: The Airport has plans to upgrade Runway 1/19. A Categorical Exclusion for this project was approved by the FAA in 2010.
- International Cargo Center: Chicago Rockford International Airport offers build-to-suit and spec building opportunities on airport property. The International Cargo Center is a phased development of up to 33 acres of land located adjacent to the primary runway (7/25).

### 4.2 Summary of Cumulative Impacts

#### 4.2.1 CUMULATIVE GREENHOUSE GAS IMPACTS

While the scientific understanding of climate change continues to evolve, the *Intergovernmental Panel on Climate Change Fourth Assessment Report* has stated that warming of the Earth's climate is unequivocal,

and that warming is very likely attributable to increases in atmospheric GHGs caused by human activities (anthropogenic) (IPCC 2007). The Panel's *Fourth Assessment Report* indicates that changes in many physical and biological systems, such as increases in global temperatures, more frequent heat waves, rising sea levels, coastal flooding, loss of wildlife habitat, spread of infectious disease, and other potential environmental impacts are linked to changes in the climate system, and that some changes may be irreversible (IPCC 2007).

The release of anthropogenic GHGs and their potential contribution to global warming are inherently cumulative phenomena. It was assumed that this energy project would displace fossil fuel electricity currently produced by conventional means, resulting in potential gross GHG reductions of 7 million tons of carbon dioxide over the life of the project. The proposed project would neither reduce the concentration of GHGs in the atmosphere nor reduce the absolute annual rate of GHG emissions; rather, it would potentially decrease the rate at which GHG emissions are increasing every year and contribute to efforts ongoing globally to reduce GHGs and slow climate change.

#### **4.2.2 GEOLOGY AND SOILS**

Impacts to geology and soils resulting from the proposed project would be minimal as BMPs would be used to minimize soil erosion. The Falcon Road and Runway 1/19 upgrade projects would also involve minimal disturbance of soil and subsurface materials. The airport property on which the planned development is to occur is not contiguous to the proposed project site. DOE has therefore determined these cumulative activities would not have a cumulative effect to geology and soils.

#### **4.2.3 LAND USE**

The conversion of 70 acres of farmland from agricultural uses to a solar farm would represent a minor decrease in farmland availability in the region. The listed reasonably foreseeable future projects in the vicinity of the proposed project site would not likely affect or be affected by the proposed project. Collectively, these projects would not likely affect land use or development patterns beyond the boundaries of the airport and the project site; therefore, DOE expects that cumulative effects on land use would be negligible.

#### **4.2.4 AIR QUALITY**

The Rockford Solar Energy Project is in an attainment area for all criteria air pollutants. Operational emissions from the proposed project would be limited to those from emergency and vehicular traffic to and from the site. By potentially displacing the use of natural gas and other fossil fuels to produce electricity, the proposed project could contribute to long-term beneficial cumulative impacts on air resources, specifically the reduced generation of carbon dioxide and other GHGs. Adverse cumulative impacts related to air quality, especially air emissions from construction equipment and vehicles, would be both minor and temporary. DOE concludes that the decrease in GHG emissions would result in a net beneficial cumulative impact related to air quality in the vicinity of the proposed project.

#### **4.2.5 WATER RESOURCES**

Neither the proposed project nor the listed reasonably foreseeable future projects would have a discernible effect on groundwater. Impacts to surface water by the proposed project would be minimal, and the other projects are separated from the proposed project site by the Kishwaukee River. The other projects would not likely affect floodways, floodplains, or wetlands. DOE concludes that the proposed and other projects would not likely have a cumulative effect on water resources.

#### **4.2.6 BIOLOGICAL RESOURCES**

There is little native vegetation or habitats that would be affected by development of the site, other than the potential Indiana bat breeding habitat, which is not contiguous with similar potential habitat. The proposed project would result in the minor loss of forage and cover habitats for the species that use the agricultural lands, and fencing would make the property inaccessible to larger species. The area that would be removed from agricultural production would be minor. Post-construction revegetation with low-growing, native species would provide habitat for many species of birds, insects, reptiles, amphibians, and small mammals; moreover, revegetation and the return of relative species would neither affect nor be affected by the other projects in the area. The Falcon Road and Runway 1/19 upgrade projects would not likely result in conditions substantially different from those that currently exist, and therefore are not expected to have any discernible cumulative impact on biological resources. Development associated with the International Cargo Center is of a relatively small size and physically separated from the proposed project location by the Kishwaukee River and associated wetlands. DOE concludes that the proposed project and the reasonably foreseeable future projects would not result in adverse cumulative impacts to biological resources.

#### **4.2.7 HISTORIC AND CULTURAL RESOURCES**

Neither the proposed project nor the listed reasonably foreseeable future projects would affect historic properties or archaeological resources. No cumulative impact to these resources is anticipated.

#### **4.2.8 SOCIOECONOMICS**

DOE expects a beneficial impact on socioeconomics from operational job creation for the proposed project. The planned Falcon Road and Runway 1/19 update projects and the International Cargo Center development also would contribute to ongoing construction jobs in the area. Cumulative impacts to the local construction industry, however, would be minor, as the contribution to employment in this sector would cease once that phase of the projects were completed. Further, the majority of the work associated with construction of the proposed project is substantially different in nature from the paving and building efforts associated with the other projects, so there would likely be little overlap in workforce needs. Similarly, employment increases that may result from PV manufacturing would not likely contribute to a cumulative effect when combined with those associated with the other projects. This is due in part to the temporary nature of the PV manufacturing effort and the different skill set required for a manufacturing workforce.

Some cumulative effects could result from the combination of the proposed project and the two future solar projects RSP is considering. Such effects would be largely dependent upon the timing of the projects. In the event that the projects were developed sequentially, a greater number of jobs could be retained; if project schedules result in overlapping production demand, a greater number of temporary jobs could be created and some increase in job retention might also result. Because the project schedules have not yet been developed, cumulative effects cannot be readily assessed at present; however, some overall increase in temporary and/or permanent employment would likely result.

## 5. REFERENCES

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- U.S. Department of Energy, Concentrating Solar Power Commercial Application Study: Reducing Water Consumption of Concentrating Solar Power Electricity Generation, undated.
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