

## **Measure 5: Incentives for Solar Projects on Unused/Contaminated Land, Ag & Industrial Facilities and Parking Lot/Feedlot Solar Canopies**

### **Measure Concept**

Provide incentives for purchase and installation of solar panels on unused/contaminated land, rooftops of agricultural, industrial, and commercial facilities, and solar canopies over parking lots and animal feedlots.

### **Description and Background**

By early 2023, Nebraska had nearly 70 megawatts of solar photovoltaic capacity, including about 28 MW of customer-sited, small-scale (less than 1-MW) capacity. However, Nebraska has enormous potential for additional solar development. Solar generation projects can not only reduce GHG emissions, but also reduce electricity costs and foster economic development.

Community feedback has shown that some residents are concerned about solar facilities competing with other land uses such as agriculture. Solar development projects located at unused/contaminated lands, agricultural and industrial facilities, and commercial and residential properties can be a means of generating electricity locally and saving on electricity costs while avoiding development in greenfield areas.

This measure will provide incentives for solar projects in non-greenfield locations, reimbursing up to 60% of project costs. Remaining project costs will be the responsibility of the solar equipment owner. Grant funds could be combined with incentives provided by the public electric utility and with federal tax credits; however, in those cases the grant reimbursement percentage could be reduced to 30% to extend the reach of CPRG grant funds to a larger number of projects while still providing significant incentives to spur interest.

Projects that could be funded through this measure include solar panels on industrial, commercial, and multifamily residential rooftops, small ground arrays at agricultural center-pivot corners, and canopies above parking lots and cattle feedlot pens.

One potential commercial site program could provide incentives for solar projects for grocery stores in small rural communities, which would reduce utility costs for these stores, making them more economically viable and more likely to survive to provide local food supplies to their communities. Many such communities are in low-income disadvantaged areas, and such groceries could be prioritized if interest in such a program develops.

Residential projects could include rooftop or ground installations at apartment or condominium complexes. The Lincoln Electric System (LES) has recent experience with this type of project in new construction. LES has developed administrative procedures to credit unit residents virtually with reduced usage without needing to install separate wiring and solar panel disconnects for each unit, which reduces project costs for the solar component. In addition, NDEE's utility partners have pointed out that there are 99 public housing authorities in the state, many of which are master-metered (one metered electric service to many low-income housing units). In these cases, one solar array could easily provide power to multiple low-income units with direct reductions in grid usage for each unit.

Parking lot solar canopy project locations could include parking lots at apartment complexes. If these projects were co-located with separately funded installation of EV charging equipment, the canopies would shelter the vehicles and charging equipment while providing electrical power to offset the cost of grid electricity for the apartment complex owner.

During the summer, consistent exposure to sun and heat can be extremely detrimental to cattle. As a result, some cattle feedlot operators construct shade structures over portions of their facilities. Adding solar panels to the shade structures would reduce the feedlot's dependence on grid electricity and enable the canopy structure to serve a dual purpose. Although dust from the feedlot could accumulate on the panels and reduce their generation, rainfall and periodic manual cleaning during dry periods would alleviate that potential problem. The economic benefit from the reduced electric bills from the local utility would provide a financial incentive for the owner to properly maintain the panels.

Other specific project ideas will be solicited through marketing efforts around the state. All of these projects would reduce dependence on grid electricity and reduce the amount of grid generation from fossil fuels. Reductions in CO<sub>2</sub>, NO<sub>x</sub>, and SO<sub>2</sub> will potentially directly benefit five Nebraska counties (Adams, Douglas, Lancaster, Lincoln, and Otoe) that host coal-fired generating stations as well as surrounding areas.

### **Administration**

Funds will be subawarded to the Nebraska Public Power District, Municipal Energy Agency of Nebraska, Omaha Public Power District, and Lincoln Electric System to administer the solar projects. The allocation of funds to the different utilities will be determined based on their differing levels of electricity demand.

Nebraska is a 100 percent public power state; all electric consumers receive power from public entities, including public power districts, electric cooperatives, municipal electric systems, joint action agencies, or a combination of the above. The Nebraska Public Power District (NPPD) provides wholesale electricity to many smaller rural public power districts, cooperatives, and communities across most of the state. The Municipal Energy Agency of Nebraska (MEAN) similarly provides wholesale electricity to smaller municipalities across Nebraska. NPPD and MEAN collaborate with their wholesale customers in the development of energy efficiency and other incentive programs.

The Omaha Public Power District serves a 13-county area in southeastern Nebraska, while the Lincoln Electric System is the municipal utility for the City of Lincoln. Both entities currently administer energy efficiency and other incentive programs in their service areas.

This program will provide rebates or other financial incentives to reduce the upfront costs of installing solar, helping make solar energy a more viable option for customers.

### **Eligibility**

- Projects must be located in Nebraska.
- The applicant must be in compliance with all Nebraska environmental laws and with the Department's regulations and permits at all Nebraska locations.
- The applicant provides access to the land or structure
- Recipient commits to maintenance of the arrays via the project agreement
- Project must be pre-approved prior to purchase and installation of the equipment.
- Applicant must own the property/building where the system will be installed

Additional eligibility requirements will be dependent upon the specific program and will vary among subawardees.

#### Project Requirements

- The project must be in compliance with all state and local regulations and ordinances and obtain any required permits. NDEE may require the applicant to submit project information to the Nebraska Game and Parks Commission using the Nebraska Conservation and Environmental Review Tool for review of potential impacts to threatened and endangered species, protected lands, and other natural resources.
- Photo voltaic panels must have a 20-year or more manufacturers performance warranty and inverters must a 10-year or more warranty.
- The installer warranty must include all costs of repair or replacement for a minimum of two years.
- Solar equipment installers must be a part of a Nebraska electrical utility trade alley program or vetted by the electric utility provider.
- Solar arrays must be properly orientated and be free from excessive shading.
- Subawardee or the solar installer will provide the host community with a maintenance schedule for the equipment and the projected costs for performing the scheduled maintenance.
- If the solar project owner enters into a net metering agreement to sell excess energy to the local utility, that income is considered as program income and must be applied to the maintenance and upkeep of the solar installation to insure its continued operation and delivery of environmental benefits.

#### Application

The subawardees must require the following information on the application form:

- Location of the project: Address, City, Zip code
- Quotes for all equipment and installation expenses
- Require three set of dated cost estimates if the total project costs exceed \$250,000
- Detailed project scope, timeline, and cost
- Identification of Tax Credits being pursued
- System design specifications

Additional application requirements will be dependent upon the specific programs. The subawardee must develop general guidelines, application process and procedures, forms, and payment procedures and submit these to NDEE for review and approval prior to commencement of projects.

#### Applicant Selection

All applications that meet the eligibility requirements and provide the required information will be considered for a rebate. The subrecipient will have the discretion to develop their selection process for their incentive programs. Applications may be accepted on a rolling basis or within set program timelines. Preference should be given to first time recipients vs repeat awards. The subawardee must clearly specify the selection process in their program materials.

## Reimbursement

Upon satisfactory completion of the project, the subawardee will submit a reimbursement request to NDEE. NDEE will reimburse the recipient 60% of the project costs minus all available revenue streams. A request for reimbursement must be made using the form provided by NDEE and must include:

- Project type
- Project location
- Date project was completed
- kW of solar capacity added
- Projected electricity cost savings, if applicable
- Total project cost
- Request for reimbursement

The subawardee will be required to submit, monthly or quarterly invoices and documentation costs for which reimbursement is sought pursuant to the terms of the agreement and the Scope of Work. All disbursements of costs incurred and paid for the project shall be reviewed by NDEE for eligibility during the reporting and reimbursement process. Eligible costs include costs directly related to a preapproved program/project. All invoices will be reviewed pursuant to the provisions of the Nebraska Prompt Payment Act. No expenses incurred prior to the effective date of the agreement, or outside of the terms of the Agreement are eligible unless amended per the Agreement. The statement of costs shall be signed by the Subrecipient authorized representative.

## Subaward Agreement

Before commencing work, selected subawardees must sign an Agreement with NDEE that codifies all the program requirements. The agreement also includes applicable Federal Requirements from the EPA Terms and Conditions along with standard Nebraska state government requirements. NDEE will provide copies of each subrecipient agreement to EPA Project Officer (PO) if requested. Each agreement will contain a workplan (types of programs/projects) and specific budget allocations to include administrative costs, indirect rates, if applicable, and program support costs.

NDEE will follow EPA subaward policies and will educate recipients by providing training and guidance on the terms of the agreement. NDEE will require monthly status calls with subaward recipients to monitor expenditures, milestones, and overall program success. Subaward recipients will be required submit semi-annual reports to NDEE.

## **Program Timeline and Targets**

NDEE proposes to implement solar projects according to the tentative timeline presented in the table below, which was determined during initial discussions with Nebraska electric utilities. This schedule does not include all of the potential types of solar project that could be initiated under this measure. In addition, supply chain issues with transformers and other equipment could cause project delays that would affect this timeline.

## Solar Project Timeline

This measure will fund solar projects with a variety of sizes and locations. The table below establishes the number of expected location types and capacity targets for the duration of the grant. NDEE will use the solar capacity data provided in subawardee reports to track compliance with these targets, calculate

emission reduction benefits, and provide guidance for any program adjustments during the term of the grant.

Federal Fiscal Year	# Projects Completed	Project Types	Total Capacity (kW)	Annual Generation (kWh)
2025	15	Solar at Pivot Corners	1,125	2,102,526
	1	Parking Lot Solar at NPPD Office	150	
	1	Parking Lot Solar Statewide	50	
Annual 2026 - 2029	15	Solar at Pivot Corners	1,125	2,340,523
	1	Parking Lot Solar Statewide	50	
	3	Cattle Feedlot Solar Canopies	300	

#### Administrative Timeline and Milestones

Federal Fiscal Year	Milestones	Tasks
2025	Nov-Dec. 2024	EPA Funding received in October 2024. Subawards to participating electrical utilities. NDEE will follow EPA subaward policies and will educate recipients by providing training and guidance on the terms of the agreement.
	Jan-Mar 2025	Develop general guidelines, application procedures, forms, and payment procedures. Evaluation and development of QAPP if needed.
	April-Oct 2025	Open applications on a rolling basis or within set program timelines. Submission of semiannual report and LIDAC report to EPA.
2026		Select and fund additional projects. Submission of semiannual reports to EPA.
2027		Select and fund additional projects. Submission of semiannual reports to EPA.
2028		Select and fund additional projects. Submission of semiannual reports to EPA.
2029		Select and fund additional projects. Submission of semiannual reports to EPA.
2030	January 2030	Submission of final report to EPA.

#### Expected Outputs and Outcomes

Outputs/ Performance Measures	Outcomes / Projected Environmental or Programmatic Improvement
# and type of projects kW of solar capacity added Semi-annual progress reports and final report	Reduced energy costs Reduction in metric tons CO <sub>2</sub> e, including those in LIDAC Amount of funding distributed to projects in LIDAC

### **Greenhouse Gas Emissions Reductions**

This measure would install 7.225 MW of solar capacity in various locations that would not displace other productive activities. Emissions reductions (avoided emissions) were calculated from the reduced need for grid electricity based on the added solar capacity. The calculations for this measure are detailed in the M5-Solar-Unused-Land sheet in the GHGcalcs\_NebraskaDEE.xlsx workbook.

#### Methodology

Annual power output corresponding to the annual additional solar capacity was estimated using the National Renewable Energy Laboratory PVWatts Calculator (<https://pvwatts.nrel.gov>). A location near the center of the state was used for the power output modeling. The resulting annual reduction in needed grid electricity was used to directly calculate annual avoided emissions.

These calculations assumed:

- A total of 7,225 kW DC of solar capacity will be installed from 2025 through 2029.
- Projects with 1,325 kW total capacity would be installed in 2025. Projects with 1,475 kW capacity annually would be installed from 2026 through 2029.
- Installation costs vary with the type of facility.
- Emission rates from electricity generation were assumed to decline through time due to grid decarbonization.
- Emission reductions were computed using declining emission rates estimated from two NREL 2023 Standard Scenarios.

Details are provided on the *Elec-Grid-Methodology* and following sheets in the GHGcalcs.xlsx spreadsheet.

<b>Cumulative Avoided Emissions</b>						
	GHG Emissions Reductions (MT CO <sub>2</sub> e)	CO <sub>2</sub> Emissions Reductions (MT)	CH <sub>4</sub> Emissions Reductions (MT CO <sub>2</sub> e)	N <sub>2</sub> O Emissions Reductions (MT CO <sub>2</sub> e)	SO <sub>2</sub> Emissions Reductions (MT)	NO <sub>x</sub> Emissions Reductions (MT)
<b>2025</b>	1,791	1,665	112	7	1.7	1.3
<b>2026</b>	4944	4,598	307	19	4.7	3.5
<b>2027</b>	8,733	8,119	545	34	8.5	6.2
<b>2028</b>	12,495	11,610	785	48	12.2	8.9
<b>2029</b>	16,666	15,480	1,052	64	16.3	11.9
<b>2030</b>	20,300	18,851	1,286	77	20.0	14.5
<b>2050</b>	49,135	45,556	3,192	182	48.5	35.2
<b>Cumulative Avoided Emissions for 60% Grant Funding</b>						
<b>2030</b>	12,180	11,311	772	46	12.0	8.7
<b>2050</b>	29,481	27,334	1,915	109	29.1	21.1

**Longevity of GHG Reductions**

According to the U.S. Department of Energy, the estimated operational lifespan of a photovoltaic module is about 30 to 35 years. The solar projects constructed using this grant funding are expected to produce useful electric power throughout the 2025 to 2050 timeframe considered here. As these solar arrays will reduce power costs for their owners, it is anticipated that they will be motivated to utilize and maintain the solar equipment throughout this time period, resulting in sustained greenhouse gas reductions.

**LIDAC Benefits**

This measure is not specifically targeted toward low-income and disadvantaged communities. However, the prospective utility subawardees have pointed out several opportunities for maximizing LIDAC benefits of solar projects, including working with public housing authorities as well as grocery stores in low-income rural communities. NDEE will work with the subawardees to encourage marketing of the funding opportunities to LIDAC areas and will track the locations of the projects funded to determine the proportion of economic and emission reduction benefits to LIDACs.

**Cost-Effectiveness**

NDEE has budgeted \$28,081,847 for Measure 5 to achieve a cumulative total of 12,180 metric tons of greenhouse gas reductions by 2030. The resulting cost-effectiveness for this measure is \$2,305.57 per metric ton CO<sub>2</sub>e reduced.

**Budget**

<b>Category</b>	<b>Budget</b>	<b>Narrative</b>
<b>Personnel</b>	\$218,000	Estimated at 0.35 FTE per year. Includes portions of salary of full-time staff to perform tasks.
<b>Fringe Benefits</b>	\$69,215	Includes taxes, medical insurance, retirement, and other non-salary expenses estimated as a percentage of salary. The current rate for Fringe Benefits is 31.75%.
<b>Travel</b>	\$6,887	Includes costs for mileage, meals, and lodging necessary to implement the program and to oversee projects. Costs are estimated annually for staff travel to project site visits and community outreach meetings. Costs are estimated for 1000 miles per year of travel to conduct sub-recipient monitoring of activities and project site visits, and 2 overnight stays, 4 travel days for 2 staff per year.
<b>Equipment</b>	\$0	EPA definition of equipment is any item over \$5,000. There is no anticipated additional equipment needed to implement these activities.
<b>Supplies</b>	\$0	Includes usual office and laboratory materials necessary to implement tasks. Office supplies are considered part of this category also and include things such as furniture, staff desk supplies and computers. There are no anticipated additional supplies needed to implement these activities.
<b>Contractual</b>	\$25,000	Contractual work for a grant management system via subscription service to develop an electronic application database for applicants to submit their application, track their project status, submit required reports and track reimbursement. NDEE will also use this system to track expenditures and project metrics.
<b>Other</b>	\$27,675,000	Subawards to Public Electric Utilities (assumes 60% of the project is funded with CPRG share). Funds would be subawarded to the Nebraska Public Power District, Municipal Energy Agency of Nebraska, Omaha Public Power District, Lincoln Electric System and other eligible entities to expand current and pilot solar project programs in non-greenfield areas, including arrays on industrial, commercial, and multi-family residential rooftops, at agricultural center-pivot corners, and on canopies above parking lots and cattle feedlot pens.
<b>Total Direct Charges</b>	\$27,994,102	
<b>Indirect Charges</b>	\$87,745	40.25% Calculated as a percentage of salary cost (approved FY24 rate)
<b>TOTALS</b>	\$28,081,847	



