Measure 1: Promote Energy Efficiency and Electrification Upgrades for Non-Residential Facilities

Measure Concept
Provide incentives for energy efficiency, electrification, and weatherization upgrades for industrial, commercial, agricultural, public, and nonprofit buildings and facilities.

Description and Background
Addressing energy use in non-residential buildings, and especially in industrial facilities, is one of the highest impact measures that can be implemented to reduce greenhouse gas emissions. Nonresidential buildings and facilities present considerable opportunities for saving energy and reducing greenhouse gas emissions, as all such facilities require heating, cooling, and lighting. In addition, the over 1,600 manufacturing facilities in Nebraska also utilize energy for process heating and machine drive (motors). A recent energy savings analysis of small- and medium-sized industrial facilities in the United States concluded that motors, electrical demand management, and process heat recovery provide the largest opportunity for energy savings. This measure would provide incentives for energy efficiency, electrification, and weatherization upgrades for industrial, commercial, agricultural, public, and nonprofit buildings and facilities. Grant funds would cover 50% of the project costs.

This measure is limited to nonresidential facilities in order to fund larger, more cost-effective projects. In addition, funding will be available for residential projects in Nebraska through U.S. Department of Energy grants beginning as soon as 2025.

Nebraska's public electric utilities offer financial incentives to commercial and industrial customers to undertake energy efficiency upgrades to reduce electricity consumption and save on annual energy costs. Simpler upgrades, such as switching lighting to LED technology, are prequalified, whereas larger projects for industrial facilities require an energy audit to identify the cost-effectiveness of different upgrades. Commercial companies and the Nebraska Industrial Assessment Center (NIAC) at the University of Nebraska Lincoln provide energy audits for small to mid-sized industrial facilities. However, existing utility incentives are not sufficient to spur all facility owners to proceed with the identified upgrades. Funds from this grant can be combined with the existing utility incentives to increase the overall incentive funding, which should increase the rate of adoption of the identified upgrades.

Energy assessments by NIAC have also identified many efficiency upgrades that would reduce natural gas use at industrial facilities. Currently there is little funding available to assist facilities in implementing these upgrades. This measure would provide funding for those upgrades.

The greenhouse gas emissions reductions forecasted from the use of these grant funds will be in addition to those already achieved by existing utility energy efficiency programs.

Administration
This measure will use CPRG implementation funding to expand the reach of the electrical energy efficiency programs already operated by Nebraska public utilities as well as to implement a new program of incentives to reduce natural gas use.

Electrical Energy Efficiency Projects

Nebraska is a 100 percent public power state; all electric consumers receive power from public nonprofit 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 also administer energy efficiency and other incentive programs in their service areas. The energy efficiency incentive programs operated by Nebraska public electric utilities are funded directly by the utilities and their ratepayers.

Funds will be subawarded to the Nebraska Public Power District, Municipal Energy Agency of Nebraska, Omaha Public Power District, Lincoln Electric System, and other eligible electric cooperative power suppliers/entities to expand their current electrical energy efficiency and electrification programs. The allocation of funds to the different utilities will be determined based on their differing levels of non-residential electricity demand; that information has been requested from the prospective subawardees. Subawardees will use these funds to increase the number of projects funded through their energy efficiency incentive programs. Subawardees will continue to fund projects through internal funding sources as well as additional projects using these grant funds. Facilities interested in funding for energy efficiency measures will apply directly to the utility that provides their electrical service.

Total project costs for electrical efficiency upgrades vary widely depending on the type and size of the facility and the nature of the upgrades proposed. Typical utility incentives (partial funding) for the projects listed below have ranged from $1,000 to $15,000 in recent years. Funds from this grant will allow utilities to increase the number of projects funded. Utility and CPRG grant funds may also be "stacked" to provide an overall 50% reimbursement for high-impact projects to increase participation. The utilities will separately track use of utility and CPRG grant funds in such projects. The project facility owners will be responsible for covering all other project costs.

Natural Gas Energy Efficiency Projects

NDEE will create and administer a program to provide incentives for energy efficiency actions that reduce natural gas consumption in non-residential facilities. These projects could include installing or upgrading a boiler economizer or replacing an old, inefficient boiler. Interested facilities will apply directly to NDEE for funding. Based on data provided by the Nebraska Industrial Assessment Center, NDEE estimates total costs for these projects to range from $40,000 to $500,000. NDEE will provide 50% reimbursement for the projects selected. The project facility owners will be responsible for covering all other project costs.

Equipment Replacement

For projects that involve replacement of equipment, the equipment being replaced must be disabled and not reused or sold in working condition. Recipients of incentives for such projects will be required to submit photographic evidence that the equipment has been physically rendered inoperable. Different scrappage procedures may be required depending on the nature of the equipment. NDEE will determine

appropriate scrappage procedures for each such project based on the type of equipment being replaced.

Eligibility

Minimum eligibility requirements are as follows:

- Energy efficiency, electrification, and weatherization upgrades for non-residential facilities such as industrial, commercial, agricultural, public, and nonprofit buildings and facilities are eligible.
- 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.
- For natural gas energy efficiency projects, the project assessment must demonstrate a simple payback period greater than two years absent funding through this grant.

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

Project Requirements

All projects must be in Nebraska and must demonstrate a reduction in electricity or natural gas consumption. Projects should be cost effective and maximize GHG reductions. Additional project requirements will be dependent upon the specific program. The subawardees must clearly specify all project requirements in their program materials.

Some Nebraska electric utility incentive programs designate certain simpler efficiency upgrades, such as replacing fluorescent lighting with LED lighting, as prequalified for reimbursement. Larger and custom upgrades will require assessment by a Certified Energy Manager. Some utilities require upgrade work to be performed by a Trade Ally, a company that has completed utility training, is familiar with program requirements, and is bound to follow best practices.

For natural gas energy efficiency projects, NDEE will require an energy efficiency assessment of the facility to identify the upgrades that are most cost-effective and created the greatest GHG emission reductions. The assessment must be performed by the Nebraska Industrial Assessment Center or by a Certified Energy Manager and Professional Engineer licensed by the State of Nebraska.

Application

NDEE and the subawardees must require the following information on the application form:

- Location of the project: Address, City, Zip code
- Type(s) of upgrades and the costs
- Simple payback period
- Estimate of the annual GHG reductions to be achieved
- Cost-effectiveness of each upgrade in terms of energy use reduction and GHG reduction
- Quotes for all equipment and installation expenses
- Three sets of dated quotes if the total project costs exceed $250,000

Additional application requirements will be dependent upon the specific programs. The subrecipient must develop general guidelines, application procedures, forms, and payment procedures 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. Applications may be accepted on a rolling basis or within set program timelines. The subrecipient will have the discretion to develop their selection process for their electrical efficiency incentive programs. Utility staff will screen applications to determine if the project will result in reasonable demand and annual energy reduction. Preference should be given to first time recipients vs repeat awards. The subrecipient must clearly specify the selection process in their program materials.

NDEE will select natural gas energy efficiency projects for funding that maximize GHG reduction and cost-effectiveness. Project assessments must show a simple payback period greater than two years. Preference will also be given to projects within low-income and disadvantaged areas.

Reimbursement

Upon satisfactory completion of the project, the subawardee will submit a signed reimbursement request to NDEE. Reimbursements requests are to be submitted no more frequently than monthly, but not more than quarterly. NDEE will reimburse the up to 50% of the project costs directly to the subawardee. The subawardee will provide the rebate directly to the recipient. A request for reimbursement for each project must be made using the form provided by NDEE and must include:

- Project type
- Project location
- Date project was completed
- Copies of invoices for all equipment and work
- MMBTU or MWh Reduced
- Summary of any post-completion inspection
- Electric cost savings, if applicable
- Natural Gas cost savings, if applicable
- Total project cost
- Requested reimbursement amount

Additional reporting measures may be required upon program development and will be incorporated into the subaward agreement.

Subaward Agreement

Before commencing work, selected subrecipients must sign an Agreement 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) upon request. 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 to submit semi-annual reports to NDEE.

Program Timeline and Targets

Project Timelines

NDEE proposes to fund an array of cost-effective energy efficiency and electrification upgrades from a portfolio of measures provided by Nebraska electric utilities and the Nebraska Industrial Assessment Center. The tables below list sample actions to reduce electricity and natural gas use and the number of incentive projects for each that could be implemented annually from 2025 through 2029.

Annual Electricity Reductions for sample actions implemented each year 2025-2029.			
Data from Nebraska Public Power District, Lincoln Electric System, and University of Nebraska Industrial Assessment Center			
Action	**Annual Electricity Reduction per Unit (kWh)**	**Annual Number of Incentives**	**Annual Electricity Reduction (MWh)**
Energy Management System	22,481	100	2,248.1
Variable Frequency Drive (VFD)	65,191	25	1,629.8
VFD Air Compressor	47,694	10	476.9
Air Compressor Optimization	240,000	10	2,400.0
Prescriptive Industrial / Agricultural Lighting	21,929	100	2,192.9
Corner Pivot VFD	51,529	50	2,576.4
Hog Heat Mat	144,900	20	2,898.0
Automate pressure control in refrigeration	674,431	20	13,488.6
Upgrade HVAC Unit	381,677	10	3,816.8
Install Economizers of Rooftop Air Handlers	210,762	10	2,107.6
ANNUAL TOTAL			**33,835.1**

Annual Energy Savings for Natural Gas Energy Efficiency Measures each year 2025-2029			
Data from Nebraska Industrial Assessment Center at the University of Nebraska College of Engineering			
Action	**Annual Energy Savings Per Unit (therms)**	**Annual Number of Units**	**Total Annual Energy Savings (therms)**
Upgrade Boiler Economizer	261,000	5	1,305,000
Boiler Replacement w/ more Efficient	188,180	5	940,900
Replace Boiler with Water Heater	840,000	5	4,200,000

Install Economizer for Heat Recovery	153,980	5	769,900
ANNUAL TOTAL			

Administrative Timeline

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. Subaward recipients submit semi-annual reports to NDEE. NDEE submission of semiannual reports to EPA.
2027		Select and fund additional projects. Subaward recipients submit semi-annual reports to NDEE. NDEE submission of semiannual reports to EPA.
2028		Select and fund additional projects. Subaward recipients submit semi-annual reports to NDEE. NDEE submission of semiannual reports to EPA.
2029		Select and fund additional projects. Subaward recipients submit semi-annual reports to NDEE. NDEE 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 Industrial Equipment Electrified # and type of Industrial Equipment Optimized # and type of Buildings/Facilities Optimized MMBTU or MWh Reduced for each type/total Semi-annual progress reports and final report	Reduction in metric tons CO2e, including those in LIDAC Electric $ Savings, including those in LIDAC Natural Gas $ Savings including those in LIDAC $ Funding distributed to facilities in LIDAC Semi-annual progress reports and final report

Greenhouse Gas Emissions Reductions

This measure includes potential energy efficiency actions that will reduce electricity consumption and consumption of natural gas. For both energy types, the energy savings from a suite of example actions were used with appropriate emission factors to calculate cumulative emissions reductions by 2030 and 2050. The calculations for this measure are detailed in the M1-Energy Efficiency sheet in that file.

NDEE calculated emission reductions directly from the estimated energy savings to be achieved through the example sets of actions. Data on energy savings were derived from past energy efficiency projects

and provided by the Nebraska Public Power District, Lincoln Electric System, and the University of Nebraska Industrial Assessment Center. Assumptions regarding emission factors are covered below.

Methodology

The following key assumptions about measure implementation were used to quantify emissions reductions for this measure:

- A sample set of actions reducing electricity and natural gas consumption would be implemented annually from 2025 through 2029.
- Project costs would vary depending on the type and scale of the energy efficiency action.
- Grant funds would cover 50% of the cost of each energy efficiency project.
- For projects reducing natural gas consumption, the emission factor for CO_2 was drawn from the EPA Greenhouse Gas Emission Factor Hub (https://www.epa.gov/climateleadership/ghg-emission-factors-hub), and the emission factors for CH4 and N2O were drawn from the IPCC Emission Factor Database (https://www.ipcc-nggip.iges.or.jp/EFDB/find_ef.php) using factors for Manufacturing Industries and Construction.
- For projects reducing electricity consumption, emission rates were assumed to decline through time due to grid decarbonization. Emission reductions were computed using emission rates estimated from two National Renewable Energy Lab (NREL) 2023 Standard Scenarios. Details are provided on the *Elec Grid Methodology* sheet in the GHGcalcs.xlsx spreadsheet.

Emissions reductions were calculated from the estimated energy savings. Emission reductions for actions reducing natural gas consumption were calculated assuming no future change in the proportion of fossil-fuel and renewable natural gas in the supply chain. Emission reductions for actions reducing electricity consumption assumed declining GHG emissions due to grid decarbonization. Details are provided on the *Elec Grid Methodology* sheet in the GHGcalcs.xlsx spreadsheet.

NDEE considers the emissions reductions listed below as annual targets to be achieved through a mix of different types of energy efficiency projects. NDEE will track the emissions reductions achieved as part of semiannual reporting to EPA and compare them to these targets to gauge progress and adjust programs if necessary.

Cumulative Avoided Emissions for All Energy Efficiency Projects 2025-2029						
	GHG Emissions Reductions (MT CO_2e)	CO_2 Emissions Reductions (MT)	CH_4 Emissions Reductions (MT CO_2e)	N_2O Emissions Reductions (MT CO_2e)	NOx Emissions Reductions (MT)	SO_2 Emissions Reductions (MT)
2025	67,231	65,0767	1,904	132	51	27
2026	192,086	186,319	5,092	359	147	74
2027	364,025	353,871	8,966	638	280	130
2028	573,476	558,804	12,957	929	444	186
2029	827,100	807,357	17,435	1,261	643	249
2030	1,072,785	1,048,529	21,419	1,563	836	303
2050	5,867,089	5,271,294	60,196	5,124	4,289	742.5
Cumulative Avoided Emissions for 50% Grant Funding						
2030	536,393	524,264	10,710	782	418	152
2050	2,933,544	2,635,647	30,098	2,562	2,114	371

Longevity of GHG Reductions

The non-residential energy efficiency upgrades undertaken through this measure will reduce energy costs for facility owners and assist them in maintaining their economic viability. Upgrades are expected to be installed in commercial, industrial, and municipal buildings that have long life spans, making it more likely that these efficiency improvements will remain in place through the entire 2025-2050 time frame. Targeting natural gas projects with simple payback periods greater than 2-years will help ensure facility owners are planning for long term operation.

LIDAC Benefits

Many industrial and commercial facilities are located in low-income and disadvantaged communities. Energy efficiency upgrades in such facilities may reduce not only greenhouse gas emissions, but emissions of other air pollutants. In evaluating applications for natural gas energy efficiency upgrades, NDEE will give preference to projects located in LIDAC areas, which include both urban and rural areas of Nebraska. NDEE will also track the locations of electrical energy efficiency projects to assess their impact on LIDAC communities.

The Nebraska Industrial Assessment Center provided NDEE with an Environmental Justice (EJ) analysis of small and medium-sized industrial facilities that received energy efficiency assessments from 2017 through 2022. EJ census tracts were identified using the EPA Environmental Justice Facility Mapping Tool (https://awsedap.epa.gov/public/extensions/P2_EJ/P2_EJ.html). Of the 129 facilities that received assistance, 47% were within EJ census tracts and 55% were adjacent to an EJ census tract. Based on this analysis, NDEE expects that between 40 to 50% of facilities receiving energy efficiency incentives through this grant will be within LIDAC areas.

Cost-Effectiveness

NDEE has budgeted $30,302,420 for Measure 1 to achieve a cumulative total of 536,393 metric tons of greenhouse gas reductions by 2030. The resulting cost-effectiveness for this measure is therefore $56.49 per metric ton CO_2e reduced, making it one of the most cost-effective measures in NDEE's CPRG program.

Budget

Category	Budget	Narrative
Personnel	$256,140	Estimated at 0.85 per year. Includes portions of salary of NDEE full-time staff to perform tasks such as grant management, program design and implementation, program oversite, engineering review. Salaries for NDEE Project Manager (50% time, $52,000 annual salary; NDEE Environmental Supervisor (15% time, $74,000 annual salary); Professional Engineer (15% time; $72,520 annual salary); and Federal Aid Administrator III (5% time, $65,000 annual salary).
Fringe Benefits	$81,324	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%.
Travel	$1,965	Includes costs for mileage, vehicle rental, meals, and lodging necessary to implement the program and to oversee projects. Costs are estimated for 600 miles per year at $0.655/mi) of travel to conduct sub-recipient monitoring of activities and project site visits.
Equipment	$0	There is no anticipated additional equipment needed to implement these activities.
Supplies	$0	Includes usual office 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.
Contractual	$25,000	Contractual work for a grant management system via subscription service to develop an electronic application database for application 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.
Other	$29,834,894	Includes subawards to the Nebraska public electric utilities to expand commercial, industrial, and agricultural electrical energy efficiency programs across the State of Nebraska. Projects to upgrade natural gas equipment would be administered by NDEE or through agreements with natural gas utilities in the state. Potential subawards could include Nebraska Public Power District, Omaha Public Power District, Lincoln Electric System, the Municipal Energy Agency of Nebraska, and other eligible electric public power districts. Subrecipients would allocate the

		majority of their funding towards participate support costs Assumes cost share of 50%, partial funding of total project costs. NDEE anticipates that a small percentage of each subrecipients allocation will be used for administrative purposes (personnel and indirect), with the remaining going towards program support costs via rebates for eligible projects.
Total Direct Charges	$30,199,323	
Indirect Charges	$103,096	40.25% Calculated as a percentage of salary cost (approved FY24 rate)
TOTALS	$30,302,420	

Additional Budget Narrative Description: Other

As described in the Administrative section of this workplan**,** funds will be subawarded to the Nebraska Public Power District, Municipal Energy Agency of Nebraska, Omaha Public Power District, Lincoln Electric System, and other eligible electric cooperative power suppliers/entities to expand their current electrical energy efficiency and electrification programs. The allocation of funds to the different utilities will be determined based on their differing levels of non-residential electricity demand; that information has been requested from the prospective subawardees. NDEE anticipates that a small percentage of each subrecipients allocation will be used for administrative purposes (personnel and indirect), with the remaining going towards program support costs via rebates for eligible projects.

Facilities interested in funding will apply directly to the utility that provides their electrical service. Specific projects are to be Determined. Total project costs for electrical efficiency upgrades vary widely depending on the type and size of the facility and the nature of the upgrades funded. Typical utility incentives (partial funding) for the projects have ranged from $1,000 to $15,000 in recent years. Utility and CPRG grant funds may also be “stacked” to provide an overall 50% reimbursement for high-impact projects to increase participation. The project facility owners will be responsible for covering all other project costs.