

WORKPLAN

1. OVERALL PROJECT SUMMARY AND APPROACH

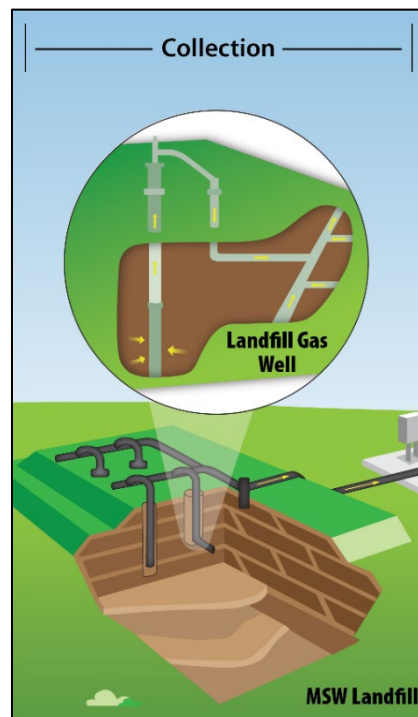
Knox County is seeking implementation funds for GHG reduction measures that will significantly reduce cumulative GHG emissions by 2030 and beyond. USEPA funding will also support the acceleration of decarbonization across the waste and materials management sector responsible for greenhouse gas (GHG) emissions. Knox County is requesting **\$4,450,000** in funding for this new, stand-alone GHG reduction measure that will be implemented solely through Climate Pollution Reduction Grant (CPRG) funds.

The Knox County Advancing Renewable Energy Project (Project) will position the County to address the impact of climate change, reduce methane emissions, and advance the State's Priority Climate Action Plan (PCAP) goals. This Project is the first phase of the multiphase project that will reduce landfill methane emissions, and in the long term, provide future reliable renewable energy projects on County property. If granted, CPRG funds will be used to install a landfill gas collection and control system (GCCS) and install 3-phase power at the project location.

According to the EPA's Inventory of U.S. Greenhouse Gas Emissions and Sinks, primary sources of GHG emissions by economic sector include: Transportation, Electric Power, Industry, Commercial and Residential, and Agriculture. An additional source of GHG emissions is the waste sector which includes landfills, wastewater treatment, composting, and anaerobic digestion at biogas facilities. Landfills contributed 71.9% of these waste sector emissions in 2022. Overall, methane emissions from landfills account for 14% of total methane emissions by sector in 2021 in the U.S. Other sources of methane emissions derive from livestock, manure, natural gas systems, coal mining, petroleum systems, and other. According to the latest Intergovernmental Panel on Climate Change (IPCC) Assessment Report, addressing methane emissions and the impacts is important because methane is a potent greenhouse gas at least 28 times more effective than carbon dioxide at trapping heat in the atmosphere over a 100-year period.

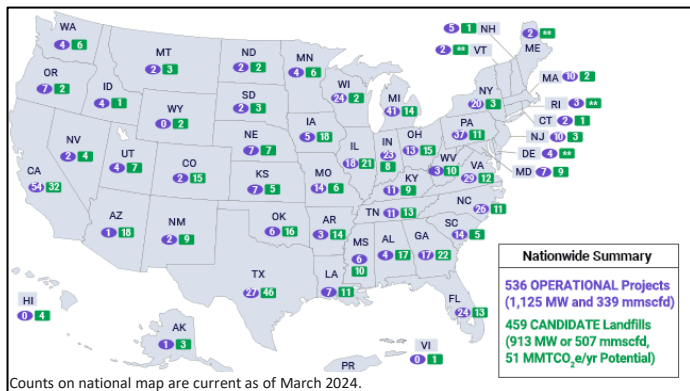
Gas collection at landfills started in the 1970s. The collected landfill gas (LFG) has many uses, for example it is used to generate electricity and can be used directly in place of natural gas, coal, or fuel in boilers greenhouses, or upgraded to renewable natural gas.

Graphic 1: Landfill Gas Collection
Source: USEPA



Graphic 2: Landfill Gas Energy Projects & Municipal Solid Waste Landfills in the United States

Source: USEPA



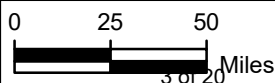
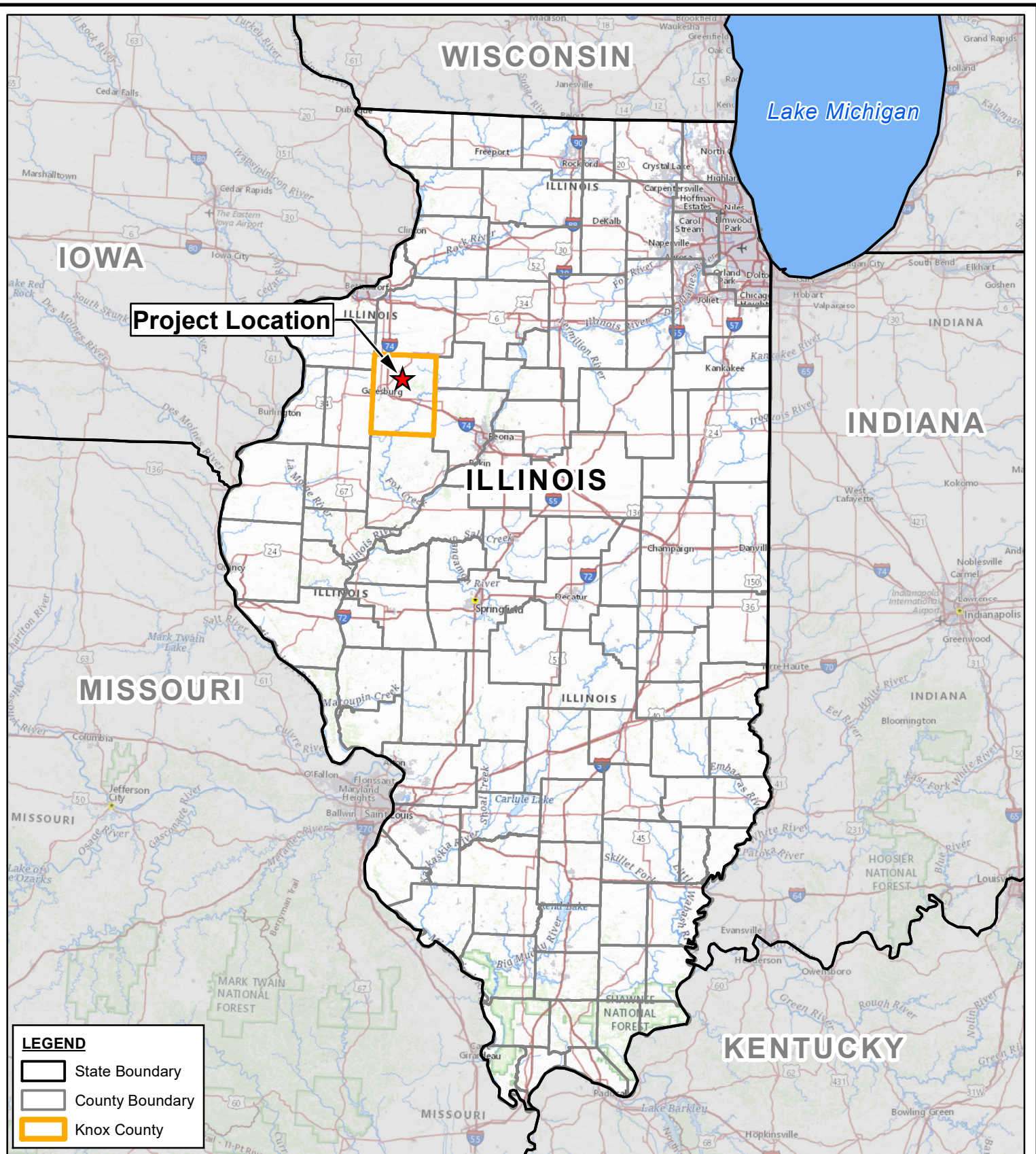
According to the EPA's Landfill Methane Outreach Program (LMOP), there are 2,634 landfills in the U.S., and 532 operational LFG projects. The LMOP also identified 463 potential LFG projects across the country. In [Illinois](#), there are 96 landfills and 18 operational LFG projects, and the Knox County Landfill Cell #3 is a "[Candidate](#)" for LFG projects. Knox County is committed to supporting state efforts to increase LFG projects to advance the overall climate action goals as demonstrated in the IL PCAP.

Knox County and Knox County Landfill

Knox County, a municipal corporation established in 1839, is located in west central Illinois, see Figure 1 on page 3 for project location. It's nearly 50,000 residents are spread through 21 townships, 4 cities, with Galesburg as the county seat, 10 villages and numerous unincorporated communities. Three of these communities, Galesburg, Knoxville, and Abingdon, meet the CEJST disadvantaged community criteria. Agriculture is a primary economic driver in the county with over 850 farms occupying 90% of the county land area. Other economic sectors include health/social assistance, retail trade, manufacturing, and education.

Knox County, along with counties across Illinois are facing the [impact of climate change](#), accelerated by increasing GHG emissions. For example, across the state, communities have experienced more frequent flooding and warmer weather. While springtime is likely to be wetter, with more intense rainfall, summer droughts are likely to be more severe; warmer winters may lengthen frost-free growing seasons, but the increasingly hot summers are likely to reduce yields. Additionally, rising temperatures can harm air quality and amplify existing threats to human health, such as increasing production of ground level ozone which causes lung and heart problems, health issues affecting Knox County residents. Ground level ozone is also harmful to plants, threatening rural Illinois with significant yield reductions of winter wheat and soybeans, an important crop in the county.

Illinois' annual greenhouse emissions in 2024 are estimated at 2229 MMTCO₂e; transportation has accounted for the largest share, followed by power, consistently since 2005. Illinois' leadership have led by example by adopting the Climate and Equitable Jobs Act in 2021, which committed the state to 100% carbon-free power by 2045 while supporting energy efficiency, electric vehicles, building electrification, and reforming utility planning and regulation. Furthermore, Illinois committed to the Paris Climate Agreement which if successful, will reduce state emissions by 39% from current levels to 139 MMTCO₂e. This Project will have significant positive impacts in the County that address the effects of climate change while directly advancing state climate action goals.



KNOX COUNTY

FIGURE 1

PROJECT LOCATION MAP KNOX COUNTY LANDFILL

This drawing is neither a legally recorded map nor a survey and is not intended to be used as one. This drawing is a compilation of records, information and data used for reference purposes only.

Date: MARCH 2024

Revision Date:

Drawn By: BJW1

Checked By: ASL

Scope: 24K007.04

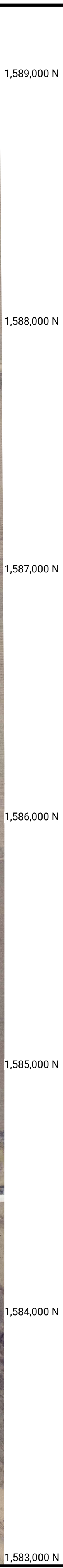
Knox County Landfill Cell #3, as approved by Permit No. 1994-105-LFM, consists of 140 acres of property with waste boundaries encompassing approximately 42 acres with an “in place” waste capacity of 1,800,000 cubic yards (cy). A vertical expansion of the facility approved in Permit Modification No. 14 consisted of approximately 3,956,000 cy of additional capacity, which increased the total in-place capacity to approximately 5,756,000 cy, excluding liner and final cover, but including daily and intermediate cover. The lower waste boundaries and the waste footprint did not change. The 2023 air emissions permit does not require a landfill gas blower, however the County proposes to capture the methane for renewable energy production. Based on this capacity certification, Landfill Cell #3 is expected to reach capacity sometime in 2029. Gas monitoring at Landfill Cell #3 consists of six Ambient Air Monitoring Stations (AAMS) and three gas monitoring devices (GMD). Gas readings measured in 2022 were consistent with historical data; methane was not detected in the AAMS. According to the most recent annual report, the landfill remains below the 500 parts per million (PPM) emission threshold requiring








This map displays the township boundaries of Knox County, Illinois. A red line traces a path from the northeast towards the center, passing through or near several townships. A red location pin is positioned near the town of Wataga. The map includes labels for various townships: Reed, Onia, Walcott, Oneida, Wataga, Chasler, Henderson, Henderson, Galesburg, East Galesburg, Knox, Persier, Tripp, Haw Creek, and Elba. Major roads like I-55, I-74, and I-24 are also shown. A compass rose is located in the bottom left corner, and a disclaimer is provided at the bottom center.

Knox County, IL

Prepared by the Knox County GIS Department. This map is not a legal survey and cannot be used as evidence in any court of law. It is for informational purposes only and is not intended as a warranty. The Knox County GIS Department is not responsible for any errors or omissions. The map is not a guarantee of any kind and is not intended to be used as a legal document. The map is not a guarantee of any kind and is not intended to be used as a legal document.

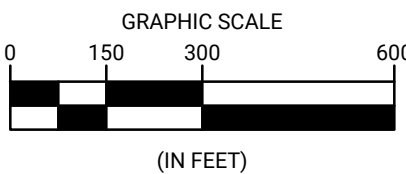
Printed: 9/28/2024



- | | |
|---|---------------------------------|
|  | EXISTING OVERHEAD ELECTRIC LINE |
|  | EXISTING DRAINAGE |
|  | EXISTING TREE/BRUSH LINE |
|  | UNPAVED ROAD |
|  | EXISTING FENCE |
|  | PROPERTY BOUNDARY |
|  | WASTE LIMITS |

NOTES

1. HORIZONTAL COORDINATE SYSTEM IS NAD 1983 ILLINOIS STATE PLANE WEST ZONE, UNITS IN SURVEY FEET. VERTICAL ELEVATIONS REFERENCED TO NAVD 1988.
2. AERIAL DRONE SURVEY FLOWN BY FOTH ON MARCH, 2022.



KNOX COUNTY LANDFILL

ONEIDA, ILLINOIS

REVISIONS	DESCRIPTION	DATE	BY	NO
				△
				△
				△
				△
				△
DATE OF PREPARATION				
	BY	DATE		
SURVEYED	FOTH	MARCH 2022		
DRAWN	CKV	MARCH 2024		
DESIGNED				
CHECKED	ASL	MARCH 2024		

SHEET TITLE:

EXISTING CONDITIONS

**(PURPOSE FOR
ISSUANCE)**

PROJECT NO: -----

SHEET NUMBER

Figure 2

controls. Knox County is voluntarily seeking to prepare for closure with a collection and control measure.

Knox County Landfill Cell #4 is expected to begin operation in approximately five years and maintain the current annual tonnage and waste types. The infrastructure for GHG reductions and GCCS will be designed to accommodate Landfill Cells #3 and #4.

Project Alignment with Illinois Priority Climate Action Plan

The Illinois Priority Climate Action Plan (IL PCAP) outlines a path towards broad emissions reductions in every large-emitting sector of the economy and advancing community benefits. The IL PCAP was developed by the IEPA to address the obstacles and challenges in meeting the state's GHG emission reduction goals, co-pollutant targets and goals, and community benefits goals. The plan was rooted in stakeholder collaboration between community organizations, non-governmental organizations, private businesses, higher education institutions, and trade associations. Their input was collected primarily through Climate and Equity Surveys, stakeholder meetings, small group meetings and workshops, and virtual presentations. The data revealed key barriers preventing participation in and benefit from climate and clean energy programs in low income and disadvantaged communities.

The IL PCAP includes several primary components.

- Greenhouse Gas Inventory
- Priority GHG Reduction Measures
- Low Income/ Disadvantaged Community Benefits Analysis
- Review of Authority to Implement
- Intersection with Other Funding Availability
- Workforce Planning Analysis

The five Priority GHG Reduction Measures include: Clean & Efficient Buildings, Clean Transportation & Freight, Clean Industry, Clean Agriculture, and Clean Power. These priorities address all the major GHG gas emitting sectors such as power, transportation, buildings, industry, and agriculture. Addressing these sectors is significant because Illinois committed to the Paris Climate Agreement and has 2030 emission reduction goals. In addition, Illinois' Climate and Equitable Jobs Act (CEJA) declares the state's commitment to transition to 100% clean energy by 2050. In order to achieve these goals, Illinois will have to reduce emissions from the major contributors: transportation, power, agriculture and buildings (IL PCAP, page 19). This Project supports the Priority GHG Reduction measure of Clean Agriculture which encompasses emissions from waste IL PCAP, page 67). Furthermore, this Project supports the State by reducing MMTCO₂e emissions from waste by capturing methane, and by future use of the captured methane gas for energy production.

The IL PCAP's Clean Agriculture: Reducing Emissions from Agriculture, Land Use, and Methane section describes the State's goals to reduce GHG emissions and meet their goals. The agricultural sector currently accounts for 12% of the state's total emissions. Within this

agricultural sector, land use is the largest source of emissions. Illinois' methane emissions across agriculture, waste, and wastewater in the GHG inventory totals 13 MMTCO₂e (IL PCAP, page 68). Efforts to reduce emissions in this sector include: low-till and no-till agriculture, cover crop planting, natural carbon storage, adopting zero-emissions commercial landscaping and agricultural equipment, mitigating or capturing and **utilizing methane emissions at wastewater and landfill facilities**. By incorporating these solutions, the topline outputs include:

1. Reduce land use emissions by 2% by 2030 and 10% by 2050.
2. Reduce total combined emissions from wastewater, landfills, and livestock by 10% by 2050 through approaches such as methane capture and utilization, anaerobic digestion, and others.
3. Reduce GHG emissions from lawn equipment and other small engines by shifting 40% of new sales to all electric equipment by 2030 and 99% of new sales to all electric equipment by 2035.

The PCAP outlines four initiatives to achieve these outputs: expanding deployment and improving efficiency of low-till, no-till, and cover crop practices; **biomethane emissions reductions, capture, and utilization in high value end uses**; supporting natural carbon storage; and accelerating clean landscaping and small engine equipment.

This Project is directly supporting the Biomethane Emissions Reduction, Capture, and Utilization in High-Value End Uses initiative (IL PCAP, page 72). The IL PCAP states "By concentrating on the practical aspects of methane capture, storage, and utilization from local sources in the agricultural, wastewater, and waste sectors, Illinois seeks to make a substantial contribution to its environmental goals". Illinois will achieve these goals by enhancing support and communication, connecting supply chains, seed grants, revenue stacking and contract facilitation, and carbon credit facilitation.

Project Alignment with Climate Pollution Reduction Grant Program

This Project is in alignment with CPRG program objectives and goals. First, this Project will stimulate and inspire transformation towards a decarbonized economy and, by allowing Knox County to advance renewable energy projects locally to further reduce GHG emissions, it will demonstrate approaches that are replicable for other landfills. Second, this Project will result in positive benefits to low income and disadvantaged communities by reducing criteria air pollutants (CAP) and hazardous air pollutants (HAP), supporting equitable economic growth, and improving quality of life near the project location. Third, this Project will achieve GHG emissions reductions that are long lasting and certain. Fourth, Knox County is committed to incorporating high labor standards, providing good quality jobs, and advancing equitable workforce development. Lastly, this Project will ensure accountability by providing clear assumptions, metrics, timelines, authorities, and budget details.

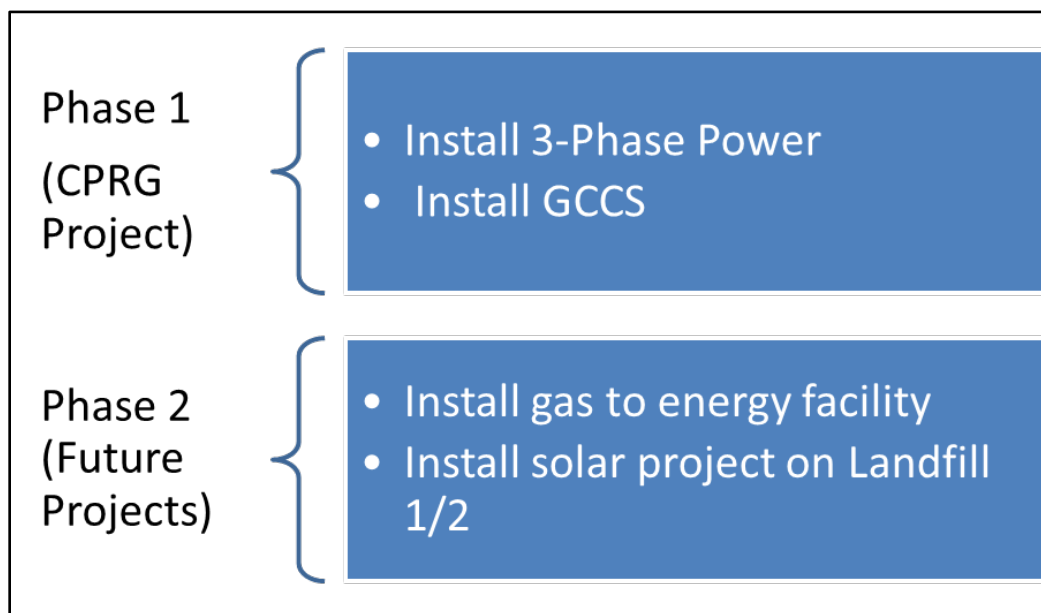
a. Description of GHG Reduction Measures

The GHG reduction measure for the Knox County Landfill Cell #3 will be the collection of municipal solid waste methane gas. The capture and conversion will require 3-phase power, which the landfill currently does not have. This measure directly supports the IL

PCAP Clean Agriculture initiative under their Priority GHG Reduction Measures. Illinois selected this measure as a priority because the agricultural sector accounts for 12% of the state's total emissions which will help it to meet the Paris Agreement commitments. One of the outputs of the PCAP's Clean Agriculture is to reduce total combined emissions from wastewater, landfills, and livestock by 10% by 2050, through various approaches including methane capture and utilization, which supports the PCRG GHG reduction measure of reducing methane emissions from landfills and wastewater facilities.

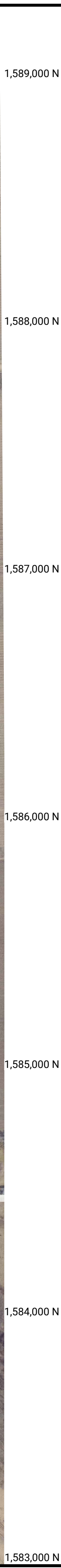
The major features are the GCCS installation and the installation of 3-phase power at the project site. The major tasks necessary to achieve these two features will include bringing 3-phase power out to the landfill and extended into the Landfill to power blowers and other blower flare skid components; installing a series of collection pipes at the landfill, well heads, gas extraction skid for flaring or collection. See Figure 3 on page 9 for the proposed future project layout.




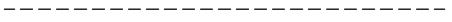





The Knox County Advancing Renewable Energy Project will install 3-phase power and gas collection and control system at the Knox County Landfill. Three-phase Power will also be used to power the future renewable energy projects.



The CPRG funded project timeline with major milestones are:

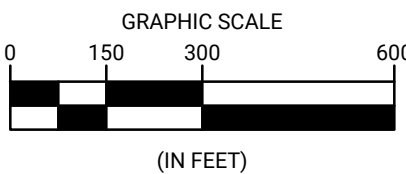
- Public utility (Ameren) installs 3-phase power to the landfill property. **2024-2025**
- Project public bid and implementation for installation of vertical gas wells (at final grade locations within Landfill Cell #3), well heads, horizontal gas piping, liquid management, and blower skid. **2024-2025**



- | | |
|---|---------------------------------|
|  | EXISTING OVERHEAD ELECTRIC LINE |
|  | EXISTING DRAINAGE |
|  | EXISTING TREE/BRUSH LINE |
|  | UNPAVED ROAD |
|  | EXISTING FENCE |
|  | PROPERTY BOUNDARY |
|  | WASTE LIMITS |
|  | FUTURE SOLAR |
|  | FUTURE GAS WELL |

NOTES

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2. AERIAL DRONE SURVEY FLOWN BY FOTH ON MARCH, 2022.



ONEIDA, ILLINOIS

REVIEWS	NO.	BY	DATE	DESCRIPTION
		△		
		△		
		△		
		△		
		△		
DATE OF PREPARATION				
SURVEYED	BY	DATE		
DRAWN	FOTH	MARCH 2022		
DESIGNED	CKV	MARCH 2024		
CHECKED	ASL	MARCH 2024		
SHEET TITLE:				
FUTURE LFG AND SOLAR				
(PURPOSE FOR ISSUANCE)				
PROJECT NO: -----				
SHEET NUMBER				
Figure 3				

- Project public bid and implementation for design and extension of 3-phase power to the desired locations on the County property. **2025**
- Project public bid and construction of final cover on sideslopes of Landfill Cell #3. This step is part of standard landfill operation and maintenance and within the County budget. **2025**

Phase 2 future projects timeline:

- Design and installation of landfill gas to energy system. **2025**
- Design and installation of solar panels on closed Landfill Cells #1/2. **2025**
- Project public bid and construction of final cover on remainder of Landfill Cell #3. **2031**

The underlying risks associated with the milestones and timeline include the inability of the County to provide support for the construction of the GCCS. This is considered a low risk. Also, a change in annual tonnages could accelerate or delay the landfill closure; however, Knox County is the only active landfill in the vicinity and maintains a relatively consistent annual tonnage rate so this is not anticipated. Based on the most recent airspace analysis, Landfill Cell #3 is expected to close in approximately 2029.

Another potential risk is the inability to source American made GCCS and equipment. Based on other GCCS projects in the state, Knox County believes this will be a low risk.

The primary risk is the cost barrier for the installation of 3-phase power. Knox County has been working with the utility Ameren to design the 3-phase extension as efficiently as possible, and based on preliminary pricing, has achieved the most reasonable price. Material costs of electrical equipment remain stubbornly high, and the distance of wiring cannot be reduced further. Knox County can optionally bond for the 3-phase power costs but has limited taxing authority. Either measure would **increase taxes on a disadvantaged population.**

b. Demonstration of Funding Need

While the short-term goal, and a direct outcome, of this project is to reduce GHG emissions the long-term goal will be the production of clean energy. The current landfill's air emissions are below the Tier 2 limit requiring emissions capture, however, Knox County sees this as an opportunity to benefit local and regional air quality, as well as help the state meet its clean air goals. In order to achieve these goals, Knox County must be able to collect its LFG and have the power necessary to do so.

Although Knox County has the capital and bonding ability for standard landfill operations, such as maintenance and closures, installing the collection units and bringing 3-phase power to the site will be a substantial, but vital, initial investment. The County's revenue stream, like many communities, has not been as strong since the COVID-19 pandemic; however they have been able to make certain reductions in county departments without reducing staff, while maintaining services. The landfill's annual

budget does not have the reserve revenue to pay the entire costs to implement this important project, in addition to the standard operational and maintenance costs of the landfill.

A 3-phase power system provides more reliable energy with fewer voltage drops making it more efficient than single phase. While small blowers can be operated on single phase power, larger units and compressors require 3-phase, or the use of phase converters to mimic 3-phase. Bringing 3-phase power to the project location and extending it within the landfill property is anticipated to cost \$2,240,000.

A GCCS is composed of a series of wells, pipes, flare and blower skid, and compressor system. The system directs the gas to a central point where it is captured for use. It is estimated these systems will cost approximately \$2,210,000 to purchase and install.

This project falls outside the County's budgeting resources. Knox County is seeking funding assistance from CPRG to help implement this essential resource in the move to reduce GHG emissions.

Once the first phase of the project, the LFG collection, is in place, the County will consider potential funding partners to help with the next phase, the gas to energy conversion. These programs may include:

- USDA Rural Energy for America Program
- USDA Biorefinery, Renewable Chemical, and Biobased Product Manufacturing Assistance Program
- IL Dept of Commerce & Economic Development programs
- IL Power Agency (support/technical, no funding)
- IL Finance Authority / IL Climate Bank

If CPRG funding is not obtained this project will be postponed and the minimum LFG collection system will be installed to flare the gas. This postponed project would not take place until required by the landfill air permit in order to delay the expenditure.

c. Transformative Impact

The immediate outcome of this project will reduce GHG emissions; the long-term goal will produce clean energy, helping the State of Illinois meet its climate goals (stated in its Climate & Equitable Jobs Act) and meet its commitment to the Paris Climate Agreement.

The successful implementation of this project presents the opportunity for Knox County, and private sector partners, to implement renewable energy projects. The landfill will pursue a gas to energy project which will extract and treat the collected LFG for a renewable energy end use. The end use could be onsite to power equipment or sale to a renewable energy company. Additionally, a solar project company, Ameresco, has

expressed interest in developing an agreement with the County for the installation of a solar project. The company has a preliminary agreement with which they are evaluating the development of a solar project on the closed Landfill Cell #1/2. The development of solar on the closed landfills requires 3-phase power for Ameresco to consider the project financially viable, based on preliminary discussions. These potential long-term outcomes of this gas-collection system project would support the IL PCAP's priority reduction measure for Clean Power generation and the CPRG's Electric Power sector installation of renewable energy systems.

2. IMPACT OF GHG REDUCTION MEASURES

Per the most recent USEPA Inventory Report, U.S. landfills released an estimated [122.6 million](#) metric tons of carbon dioxide equivalent (MMT CO_2e) of methane into the atmosphere in 2021; this represents 16.9% of the total U.S. anthropogenic methane emissions across all sectors. By volume, LFG typically contains 45% to 60% methane and 40% to 60% carbon dioxide. LFG also includes small amounts of nitrogen, oxygen, ammonia, sulfides, hydrogen, carbon monoxide, and nonmethane organic compounds ([NMOCs](#)) such as trichloroethylene, benzene, and vinyl chloride.

Table 1: Knox County Summary of Avoided GHG Emissions

	Modeled GHG Emissions (MMT CO_2e)		Avoided MMT CO_2e
	With No GCCS	With GCCS	
2025-2030	0.8	0.2	0.6
2025-2050	2.4	0.5	1.9

a. Magnitude of GHG Reductions from 2025 through 2030

The addition of 3-phase power and the GCCS allows for the reduction of 0.6 million metric tons of carbon dioxide equivalents or 19,600 metric tons of methane over 2025-2030. According to the EPA's GHG Equivalencies Calculator, the amount of reduced methane is equivalent to GHG emissions from over 130,000 gas-powered passenger cars driven in one year, or to carbon dioxide emissions from 1.5 natural gas-fired power plants in one year.

b. Magnitude of GHG Reductions from 2025 through 2050

The addition of 3-phase power and the GCCS allows for the reduction of 1.9 million metric tons of carbon dioxide equivalents or 619,000 metric tons of methane over 2025-2050. According to the EPA's GHG Equivalencies Calculator, the amount of reduced methane is equivalent to GHG emissions from over 4 million gas-powered passenger cars driven in one year, or to carbon dioxide emissions from nearly 50 natural gas-fired power plants in one year.

c. Cost Effectiveness of GHG Reductions

The utilization of tried-and-true technology to support the reduction of GHG emissions can ensure methane and carbon dioxide removal from the atmosphere with an immediate effect. The commitment of the state and EPA to achieving the climate goals is a green light to municipalities with limited resources who want to do the right thing but have limited resources. The funding of the grant will allow Knox County to “dream big” and not only use tried-and-true technology to make an immediate impact but also set the stage for more ambitious clean energy goals of incorporating solar and gas reuse in the future. The combination of the immediate impact using cost-effective and established technology with the future potential of solar and landfill gas reuse will result in a cost-effective project.

d. Documentation of GHG Reduction Assumptions

Please see the technical appendix attached *Techappx_Knox County IL* for documentation and the *GHGcalcs_Knox County IL* attachment for emission reduction calculations.

3. ENVIRONMENTAL RESULTS – OUTPUTS, OUTCOMES, AND PERFORMANCE MEASURES

a. Expected Outputs and Outcomes

The Knox County Advancing Renewable Energy Project supports the IL PCAP’s Clean Agriculture priority GHG reduction measure to reduce the total combined emissions from wastewater, landfills, and livestock by 10% by 2050 and the CPRG reduction measures in the Waste, Water, and Sustainable Materials Management sector to reduce methane emissions through collection for use or destruction.

The outputs and outcomes for this project’s GHG reduction measures will be the following:

Outputs

- Extend 3-phase power to the property as directed by Ameren
- Extend 3-phase power to the desired locations within the property
- Install 28-40 vertical gas wells
- Install a horizontal piping network for collection
- Install a liquid management system
- Install the collection blower/flare skid
- Complete electrical, mechanical, and piping design for future connection to a solar project and for future use of the landfill gas for clean energy

Phase 1 Outcomes

- Receive 3-phase power to the property
- Avoid 19,000 metric tons of methane (over 5-years) and 60,000 metric tons of methane (over 25 years) emissions based on LandGEM modeling.

- Avoid approximately 8 metric tons of HAP emissions over 2025-2050 based on LandGEM modeling.
- CAP emissions reductions
- HAP emissions reductions

Phase 2 Outcomes

- Develop a landfill gas to energy project – long-term
- Produce electricity through the solar project measured by the solar project software on an annual basis – long term

b. Performance Measures and Plan

Knox County will develop a Monitoring Plan to measure, track and report project outcomes. The County will draft a Progress Report in the initial period of 2024-2026 on a semi-annual basis and present it to the County Board Committee overseeing the Landfill, and will make the Progress Report available on its website for public viewing. Each output will be reviewed in the Progress Report. The outcomes will be updated annually in the Progress Report.

c. Authorities, Implementation Timeline, and Milestones

Knox County is the owner and operator of the Knox County Landfill. The county will be responsible for the implementation of each GHG reduction measure. The Landfill Administrator, Rodney Clear, will be Project Manager. The County Clerk, Scott Erickson will be responsible for submitting all reporting and reimbursement documentation. Knox County will work with the engineering consultant to prepare the reporting and reimbursement documents. The GCCS will be installed by the selected contractor. Knox County will work with the utility Ameren, who will install the 3-phase power to the project site. Knox County will procure an installation/construction contractor for this project.

The CPRG funded project timeline with major milestones are:

- Public utility (Ameren) installs 3-phase power to the landfill property. **2024-2025**
- Project public bid and implementation for installation of vertical gas wells (at final grade locations within Landfill Cell #3), well heads, horizontal gas piping, liquid management, and blower skid. **2024-2025**
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4. LOW-INCOME AND DISADVANTAGED COMMUNITIES

Knox County covers approximately 720 square miles in west central Illinois, 20 miles NE of Peoria, IL, 23 miles SSE of Davenport, IA, and 150 miles SE of Chicago. Of its 49,967 residents (2020 US Census), approximately 18% are people of color (EJScreen Community Report). The County is rural, with 96% of its area unincorporated; it is comprised of 14 municipalities in 21 townships.

Table 2: Demographics

Source: U.S. Census Quickfacts

	Knox County	State of Illinois	United States
Population 2020 Census	49,967	12,812,508	331,449,281
Persons under 5 years, percent	5.4%	5.4%	5.6%
Persons 65 years and over, percent	22.5%	17.2%	17.3%
Median household income (in 2022 dollars), 2018-2022 ACS	\$50,263	\$78,433	\$75,149
Per capita income in past 12 months (in 2022 dollars), 2018-2022 ACS	\$28,840	\$43,198	\$41,261
Persons in poverty	15%	11.9%	11.5%

The County has nine Climate & Economic Justice Screening Tool CEJST disadvantaged census tracts (see the attached 'Areas' spreadsheet), centered in Galesburg (7), Knoxville (1), and Abingdon (1) meeting a variety of burden thresholds, including health, housing, legacy pollutants, workforce development, and energy. All meet the low-income socioeconomic threshold; six also meet the high school education socioeconomic threshold. See *Attachment Areas_Knox County IL*.

Several blockgroups within these census tracts also meet the EPA's EJ Screening Tool (Supplemental Index) 90th + percentile in Wastewater discharge, RMP Facility proximity, Superfund Proximity, Lead Paint, Traffic Proximity, Toxic Releases to Air, Diesel Particulate Matter, Ozone, and Particulate Matter 2.5.

Table 3: LIDAC Demographics

Source: USEPA EJ Screen

EJ Screen Topic	County	State	USA
People of Color	18%	39%	39%
Low Income	39%	29%	31%
>age 64	21%	17%	17%
Low Life Expectancy	21%	20%	20%

a. Community Benefits

This project will provide environmental, health, economic benefits, and support the renewable energy economy through the reduction in methane emissions. This project will reduce 60,000 metric tons of [methane emissions](#) over 25 years that would otherwise be emitted to the atmosphere. This is equivalent to 16,000 gasoline powered passenger cars driven for one year.

Methane is a significant contributor to climate change; therefore reducing methane emissions will combat the impacts of climate change. In Illinois, climate change is resulting in more extreme rain events and periods of drought. [Annual precipitation](#) across the state has increased by 12% in the last 120 years and the number precipitation events has increased 4% in the same period. These extreme weather events have detrimental economic and health impacts. The reduction of GHG emissions will directly support the state's PCAP initiative to reduce or capture methane emissions for high-end use as well as help it to meet its climate action goal to reduce GHG emissions to 139MMTCO₂e.

Environmental

The removal of methane will result in cleaner air locally and regionally and prevent the secondary criteria pollutant emissions. It will slow the current rate of climate change, averting the severest climate risks, including extreme weather, rising sea levels, wildfires, and crop loss. In [Illinois](#), changes in extreme heat, heavy downpours, and flooding have already affected and will continue to affect infrastructure, human health, agriculture, forestry, transportation, and air and water quality.

Health

Reducing the rate of global warming will improve air quality, mitigate rising temperatures, strengthen food security and reduce the formation of ground-level ozone. Excessive heat and ground level ozone can severely impact human health, particularly those with existing health conditions and in disadvantaged communities. Extreme heat can worsen chronic conditions such as cardiovascular or respiratory disease and diabetes-related conditions; ground level ozone can worsen bronchitis, emphysema and asthma. Intensifying health concerns will also take a toll on health services. Reducing these sources detrimental to human health would locally benefit Knox County residents that suffer from asthma and heart disease, as several of the CEJST census tracts were listed due to health impacts, including heart disease, asthma and low life expectancy.

Economic

Impacts of climate change to crops are severe. Between more frequent heavy precipitation events, warmer temperatures that may bring drought, and effects of ground level ozone, crop yields, are expected to decline. This will cause economic

hardship not only to the agricultural economy of Knox County, but also to the consumers of those crops.

During phase 1 of the project, installation/construction jobs will require skilled workers. High-end jobs may be an indirect result of the phase 2 goals of this project. The renewable energy sectors may require technicians to operate and maintain the gas to energy equipment and/or the potential installation of a solar project. These renewable energy sources will be able to support other new businesses regionally. Knox County is committed to supporting local workforce development by considering barriers to training, employment, and job retention. Knox County will work with area economic development organizations to incorporate resources to support the future workforce.

Renewable Energy

A long-term outcome of this project is the potential for two new sources of renewable energy. The gas to energy system provides a variety of opportunities such as for direct use or for sale to a utility company. Electricity from a solar project would support the Illinois power grid for residential and commercial use.

b. Community Engagement

Knox County is committed to engaging all community members and keeping them informed on County agencies and events. The Landfill Administrator will provide updates at public meetings of the County Board Infrastructure Committee, which is responsible for oversight of the Knox County Landfill.

Updates will be published on the County' home page news feed and press releases will be made to local news outlets as appropriate.

5. JOB QUALITY

Knox County is committed to providing a work environment that is conducive to personal and professional growth. Knox County believes that the work conditions, wages and benefits it offers its employees are competitive with those offered by other employers in this area and industry. It is an equal opportunity employer, providing employees a living wage with a comprehensive benefits package, and participation in the Illinois Municipal Retirement Fund. The County implements health and safety plans that are developed in conjunction with workers, including anti-harassment training for workers and management, OSHA training to minimize workplace hazards (e.g., OSHA 10 and OSHA 30), and supplemental health and safety training as needed.

The landfill department currently employs a staff of 14 office and site workers. If the current landfill staff is not sufficient, the project may directly result in new hires to operate/maintain the GCCS.

In the long-term, the renewable energy opportunities that will be possible because of this project (the LFG to energy and the solar project), indirect job opportunities may arise (laborers, technicians, administrative) to fulfill the operational requirements of the renewable energy projects.

Contractors selected for this project will be required to provide fair wages in accordance with Davis Bacon and to meet labor and job quality standards.

6. PROGRAMMATIC CAPABILITY AND PAST PERFORMANCE

a. Past Performance

Knox County Health Department

Knox Community Health Center is a federally qualified health center and a Health Center Program grantee. The U.S. Department of Health and Human Services (HHS) Health Center Program, a continuing competition program for community health centers, has provided federal funding since 2012. This award helps to cover the cost of patients that qualify for lower fees due to income status. The Knox County Health Department has been awarded other HHS grant funding in the past, for mental health assistance for patients, COVID testing, and for building upgrades to expand patient capacity. The most recent award (05/01/2024 - End Date 04/30/2025) was for \$852,377; Award #: 2 H80CS24132-13-00; contact Alison Wilson, Public Health Analyst, Bureau for Primary Health Care, awilson@hrsa.gov.

Knox County successfully managed Community Grant Program funded through the American Rescue Plan Act. The program provided \$1.5M to support communities, organizations, and businesses throughout the county to recover from the pandemic.

b. Reporting Requirements

While Knox County does not have a great deal of experience with managing federal procurement and reporting obligations, the County Treasurer has extensive financial experience. Ms. Davis and Mr. Erickson are knowledgeable in management and budgeting county programs and departments. The County Clerk, Treasurer, and Attorney will work with their selected consultant to ensure all federal requirements are adhered to and met to successfully complete this important first step in the County's support of renewable energy production.

c. Staff Expertise

Rodney L. Cleair, Landfill Administrator

Mr. Cleair has been employed by Knox County for over 34 years. He has served as the Director of Solid Waste for the Knox County Landfill since June of 2017, overseeing staff and day-to-day operations of the department. Prior to that, Mr. Cleair worked for the

Knox County Mary Davis Home Juvenile Detention Center, ultimately serving as the Superintendent of Detention from June 2004 to June 2017. Mr. Clear will be the County's project manager ensuring the projects goals and objectives are met in a timely and cost-effective manner.

Scott G. Erickson, County Clerk

Mr. Erickson has a BA in political science and government. He has served as the Knox County Clerk for 20 years, prior to which he spent 3 years in the IL State Treasurers Office.

Robin E Davis, County Treasurer

Ms. Davis, with a BS in Business Finance, has over 34 years of financial experience, of which 26 years have been in the Knox County Treasurer's office. Ms. Davis will ensure that reporting and reimbursement documentation are correctly prepared and submitted on time.

Robert Bondi, Chair, Infrastructure Committee

The Infrastructure Committee is responsible for the oversight of the Knox County Landfill and other departments. Mr. Bondi has served on the Knox County Board of Supervisors & Board Member since 2013 (Vice Chairman, 2017 through 2018). He is a member of the Knox County Area Partnership for Economic Development Board (Vice Chairman, 2013 through 2020), the Galesburg Downtown Council Board (Chairman, 2001 through 2003 and 2014 to Present) and the Galesburg Business Technology Center Board (Chairman 2006 through 2008). As committee chair Mr. Bondi will be key to keeping board members and the public informed of project activities.

7. BUDGET

a. Budget Detail

The following budget for the CPRG funded project fit under the Contractual Category. Knox County is requesting **\$4,450,000** from the CPRG program. See attachment Budget_Knox County IL for a detailed cost estimate.

**Table 4: Cost Estimate for CPRG funded Knox County
Advancing Renewable Energy Project**

Extension of 3-Phase Power	\$2,240,000
Gas System Installation- 2024-2025	\$2,210,000
TOTAL	\$4,450,000

The final cover for the 25-acre sideslopes of Landfill Cell #3 is anticipated to be \$3,436,500 and will be completed in 2025, after the installation of the gas system. This expense is part of the Landfill Department budget fund.

b. Expenditure of Awarded Funds

This project will be ready to begin the scope outlined by November 2024, after the grant contract is executed. No delays are anticipated and the CPRG funded phase 1 project is anticipated to be completed within the period of performance timeframe.

c. Reasonableness of Costs

Funding will be used to help Knox County defray the cost of installing a methane collection system for future gas to energy production, including the equipment, installation, and 3-phase power to operate the system.

The opinion of costs budget prepared for this application was prepared by IL registered engineers who have vast experience in landfill management. Costs are based on the 2024 preliminary design and communications with relevant vendors, contractors, and the local utility, Ameren.