

*Intentional Decision Making
on Green Energy Projects
in Rural Communities*

A FEASIBILITY STUDY FOR MERCER COUNTY, IL

2024



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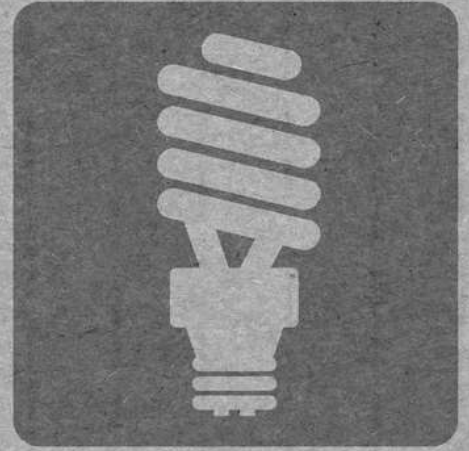
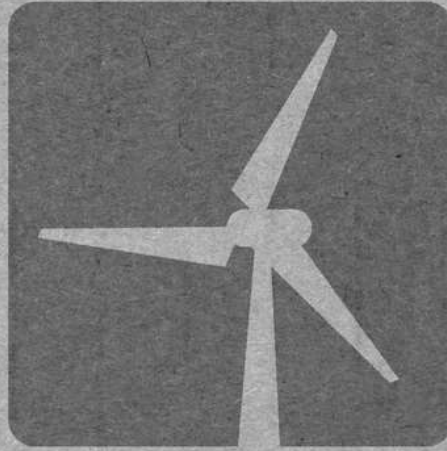
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executive summary

The Intentional Decision Making on Green Energy Projects in Rural Communities study presents an analysis of renewable energy opportunities in Mercer County, Illinois, focusing on the potential benefits and challenges of implementing solar, wind, or waste-to-fuel projects. Green energy initiatives offer significant economic advantages for the county, including job creation, increased local tax revenue, and stable income for landowners through lease agreements. These projects align with environmental goals by reducing reliance on fossil fuels, reducing carbon emissions, and improving air quality, with waste-to-fuel facilities offering the added benefit of waste reduction.

However, the transition to renewable energy does come with challenges. Construction-related impacts, such as ecosystem disruption and increased traffic, may generate community concerns. Visual aesthetics, noise, and land use conflicts are common issues associated with wind and solar projects, particularly when agricultural land is repurposed for energy production. It is crucial for Mercer County to address these concerns through proactive community engagement and transparent communication.

To ensure the authenticity of and alignment with the values and goals of the community, the study recommends intentional decision-making. This includes working closely with local stakeholders, updating zoning codes to protect prime farmland, and leveraging state and federal incentives. By prioritizing projects that complement agricultural practices and ensuring equitable access to economic benefits, Mercer County can position itself as a regional leader in renewable energy, fostering economic growth while preserving its agricultural heritage and contributing to global sustainability efforts.

Solar, wind and waste-to-fuel energy options are all feasible based on the facts presented, but all have unique challenges and risks; all have potential for positive impact.



Intentional Decision making

IN RENEWABLE ENERGY PROJECTS FOR RURAL COMMUNITIES

In her 2011 article in *The Annals of Iowa*, Angie Gumm explains that the enduring success of the Arnold O. Chantland Resource Recovery Plant in Ames, Iowa, is rooted in “the pragmatic faith that technology can be used to solve environmental problems and the belief that preservation of finite resources like land ought to be a priority.” The plant, which began operations in 1975, remains the first municipally owned waste-to-energy facility in the United States. Though it operated at a deficit for twenty years, the plant “saved nearly 800,000 tons of garbage from being deposited on more than 80 acres of farmland.” This long-standing success exemplifies an intentional approach to decision making — balancing technology, environmental responsibility, and community needs. It’s a mindset rural communities can learn from as they adopt renewable energy solutions.

Adopting renewable energy technologies—whether wind, solar, or waste-to-fuel—can have far-reaching positive impacts on a community. For the environment, green energy reduces air pollutants, conserves finite resources like coal and oil, and contributes to better public health by lowering pollution levels. Economically, these projects can create jobs, drive business investments, and help communities reduce their reliance on imported fuels, potentially increasing property values, lowering energy costs and improved infrastructure. The benefits of renewable energy extend beyond environmental sustainability. For example, between 2009 and 2016, farmland in Illinois with wind power payments saw an average increase of \$1,162 per acre. This demonstrates the financial potential of renewable energy, especially in regions where agriculture is central to the economy. However, these projects are not without their challenges. The environmental impact of manufacturing renewable energy technologies, such as the extraction of minerals and metals for wind and solar systems, raises concerns about habitat loss and degradation. Additionally, waste management issues persist, as products like solar panels and batteries eventually need disposal.

For rural communities, the economic feasibility of renewable energy projects is another concern. Renewable energy projects can be more expensive than traditional fossil fuel projects, demanding significant upfront investment in infrastructure. Large-scale projects may also disrupt local communities or traditional land uses, leading to potential social justice concerns. With the loss of agricultural land to urban development in the U.S.—more than 31 million acres since 1982—these concerns only intensify.

Mercer County, Illinois, presents an ideal context for these debates. Situated in a region where 80% of farms produce ethanol energy, questions arise: How would the county's long-term food production be impacted by renewable energy? What will happen to the current momentum in economic development, especially given challenges in broadband and road infrastructure? At the core, these questions reflect a broader concern about how communities with deep agricultural identities navigate the growing presence of renewable energy.

The movement toward renewable energy is not new, but it requires an intentional decision-making process. This study does not advocate for or against the adoption of green energy but encourages rural communities to approach renewable energy with foresight, guided by intentional decisions that reflect a community's values and long-term vision.

One notable example of this intentional approach comes from John Hawkins, trustee for the Sangamon Conservancy Trust in Illinois. In 2021, Hawkins shared his insights on renewable energy, particularly solar power, noting the importance of intentionality in the siting of projects.

Hawkins suggested working with local governments to adjust zoning regulations, encouraging solar installations to be placed on marginal lands rather than prime farmland, and capping the acreage devoted to solar projects.

This strategy protects valuable agricultural land while allowing renewable energy projects to thrive.

Similarly, in Knox County, Illinois, the first wind farm was established in 2021. The project faced resistance, particularly regarding conditional use permits. Local leadership took a proactive approach, organizing committees for landowner negotiations, ensuring that the community could guide the future of the project. These negotiations included terms for road improvements and decommissioning costs, and addressing concerns about the long-term impacts on the community. Such agreements are essential for ensuring that renewable energy projects align with the needs and values of local communities.

Henry County landowners did much the same – they promoted road repair stipends to produce revenue for the county as a part of their negotiations with green energy companies. These funds were then allocated to road repairs to compensate for any negative impact the construction and maintenance of these projects might have on road infrastructure.

For rural communities considering renewable energy, an understanding of available policies and programs is vital. The U.S. Department of Agriculture offers initiatives to help farmers reduce costs and increase income through small-scale renewable energy projects, accelerating the return on investment for farmers.

Local governments can access tax credits and incentives that improve the economic viability of green energy initiatives. Taking advantage of these programs allows communities to accelerate the adoption of renewable energy without compromising their financial stability. Negotiations around zoning, landowner agreements, and infrastructure investments are key to ensuring that renewable energy projects complement a community's needs, and similarly, residents goals.

A thoughtful approach which utilizing the programs and credits to the advantage, allows local leadership to maintain control over the project while protecting community values and ensuring long-term sustainability.

Once renewable energy projects are approved and operational, local leadership must turn to the next challenge: How can the increased revenues generated by these projects be used to support broader community goals?

In Knox County, for example, the county's wind farm is expected to generate \$38 million in tax revenue and \$30 million in landowner payments over the next 25 years, with a significant portion of that revenue earmarked for the ROWVA School District. This example shows that green energy projects can have lasting, positive impacts on local education and infrastructure. Communities with strong strategic plans can leverage renewable energy projects to drive economic development and achieve broader community goals.

At the heart of intentional decision making is a philosophical understanding of the relationship between land, economy, and community. Jimmy Carter said it best in 1976 that farmers have always been "first and foremost environmentalists." This deep connection to the land defines their identity and cultural values, and leads to ethical considerations surrounding green energy.

As communities like Mercer County seek to balance economic growth with environmental stewardship, this connection must be respected. Defining a clear "land ethic," as Aldo Leopold proposed in *The Land Ethic*, ensures that decisions about land use consider the well-being of the land itself, not just its economic value. Leopold argued that human beings are part of the land-community and that decision-making must reflect this interconnectedness.

By adopting such an ethic, communities can navigate the complexities of renewable energy projects with a clear sense of purpose. These decisions are not just about economic growth but about preserving the integrity of the land for future generations. The challenge, then, is to find a way to integrate renewable energy projects into a landscape that continues to honor agricultural traditions while embracing the future.

Mercer County, like many rural communities, stands at the crossroads of tradition and progress. Renewable energy offers significant potential for growth and sustainability, but its success depends on intentional decision making. By engaging with local stakeholders, understanding the available policies and incentives, and creating clear guidelines for renewable energy projects, communities can harness the benefits of green energy while protecting their values.

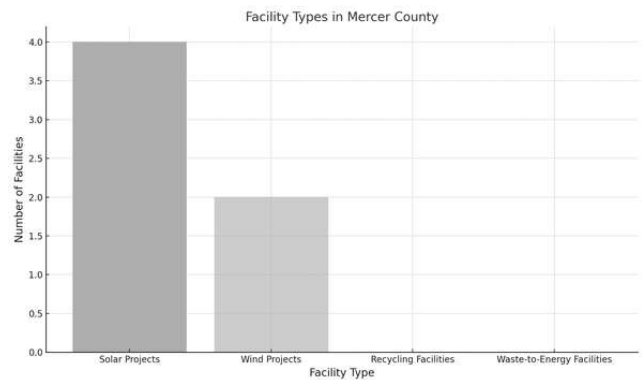
As communities consider the adoption of renewable energy, they must remember that intentional decision making is not just about making choices in the present—it's about shaping the future. By thoughtfully navigating this transition, rural communities can maintain their agricultural identity, preserve their land, and continue to thrive in a rapidly changing world.

Getting to Know GREEN ENERGY

Green energy refers to energy derived from mostly renewable, environmentally friendly sources, including solar and wind. Unlike fossil fuels, which release greenhouse gases and contribute to climate change, green energy is sustainable and replenished naturally. By harnessing these resources, green energy aims to reduce pollution, conserve natural resources, and promote a healthier ecosystem, ultimately contributing to a more sustainable future.

green energy projects Mercer, Illinois, USA

Mercer County mirrors the state and country when comparing solar vs wind utility scale projects. While the State of Illinois does have a large amount of industrial sized recycling facilities, there are none currently in this county. Interestingly, there are very few waste-to-fuel facilities nationwide, and those that were operating in Illinois have been decommissioned.



US Solar Projects - 3,700

US Wind Projects - 1,500

US Recycling Facilities - 1,046

US Waste-to-Energy Facilities - 82

Illinois Solar Projects - 161

Illinois Wind Projects - 33

Illinois Recycling Facilities - 250

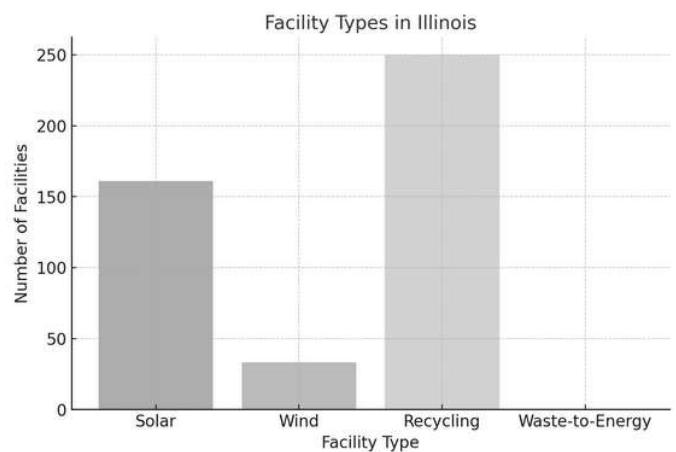
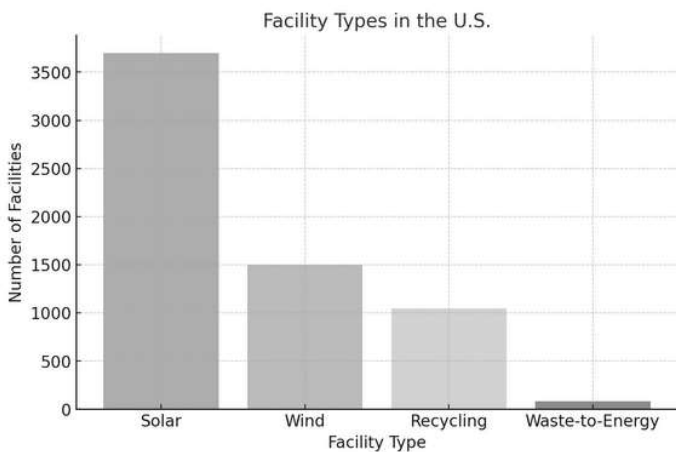
Illinois Waste-to-Energy Facilities - 0

Mercer Solar Projects - 4

Mercer Wind Projects - 2

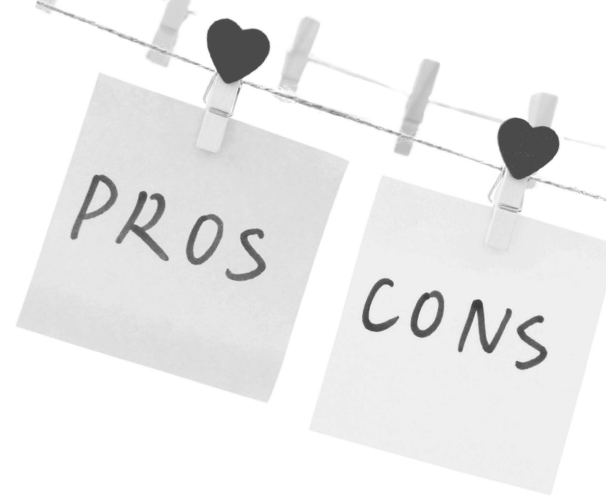
Mercer Recycling Facilities - 0

Mercer Waste-to-Energy Facilities - 0





green energy pros



Reduced Pollution: Renewable energy sources like solar and wind produce little to no air pollutants or greenhouse gases compared to fossil fuels. This reduction in emissions helps in decreasing smog, acid rain, and air pollution, leading to cleaner air.

Conservation of Resources: Green energy helps conserve finite natural resources such as coal, oil, and natural gas, thus reducing the environmental impact associated with resource extraction and transportation.

Improved Public Health: By lowering levels of air and water pollution, renewable energy projects can reduce health problems such as respiratory and cardiovascular diseases, resulting in fewer hospital admissions and lower healthcare costs.

Job Creation: The green energy sector creates new job opportunities in manufacturing, installation, maintenance, and research and development, providing local employment and stimulating economic growth.

Energy Independence: Investing in local renewable energy sources reduces reliance on imported fuels, helping stabilize and lower energy costs in the long term. This also enhances local energy security, reducing vulnerability to global market volatility.

Resilience to Disruptions: Decentralized energy systems, such as residential solar panels, make communities more resilient to natural disasters or grid failures.

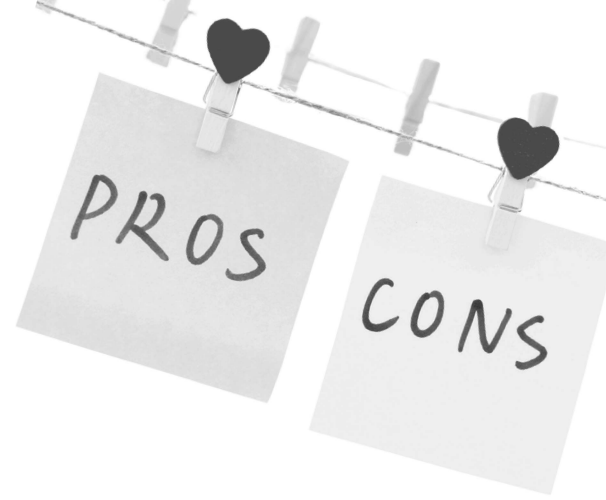
Increased Awareness and Innovation: Green energy initiatives often come with educational and community engagement efforts, raising awareness about sustainability. These projects also encourage innovation within the community, inspiring other sustainable practices.

Attracting Investment and Enhancing Property Values: Communities prioritizing green energy attract businesses and investors interested in sustainability, which fosters further economic development. Moreover, properties equipped with renewable energy systems may see an increase in market value and appeal to environmentally conscious buyers.

Strengthening Community Bonds: Collaborative renewable energy projects, such as community solar programs or local energy cooperatives, can strengthen social ties and foster a sense of collective responsibility for environmental stewardship.



green energy CONS



Local Opposition and Land Use Conflicts: A common issue with renewable energy projects, particularly wind and solar, is local resistance (NIMBYism—Not In My Backyard). Residents often support green energy in principle but resist having projects near their homes due to concerns over property values, visual impacts, noise, and potential shadow flicker from turbines.

Farmland Considerations: In agricultural regions, there are concerns that large-scale solar farms could take prime farmland out of production, affecting food supplies and farmers' livelihoods.

Environmental and Wildlife Concerns: Wind energy projects pose risks to wildlife, particularly migratory birds and bats. Some developers have tried to mitigate these impacts through technologies such as radar detection and turbine shutdown systems during peak migration periods. However, this raises operational costs.

Intermittency and Grid Stability: Both wind and solar energy systems produce electricity intermittently—only when the sun is shining or the wind is blowing. This can create challenges for grid stability and increases reliance on energy storage systems, which remain expensive and under development.

Economic Feasibility and Upgrades: Renewable energy projects often rely on subsidies, tax credits, and power purchase agreements (PPAs) to remain financially viable. Changes in policy or market demand can create financial risks, and over time, equipment such as solar panels and wind turbines degrade, leading to higher maintenance and upgrade costs.

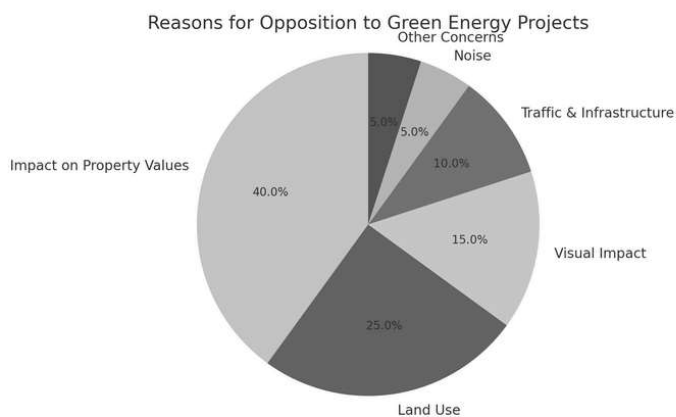
Disposal and Waste: Solar panels and wind turbine blades present disposal challenges at the end of their lifecycle. Many turbine blades end up in landfills due to the difficulty in recycling composite materials, raising concerns about the environmental impact of green energy infrastructure.

Supply Chain Bottlenecks and Critical Materials: The demand for renewable energy infrastructure has led to supply chain bottlenecks and higher costs for materials, particularly for critical minerals and rare earth metals used in solar panels and wind turbines.

Displacement of Traditional Jobs: While green energy projects create jobs, they can also displace workers in traditional energy sectors, particularly in coal, oil, and gas industries.

green energy projects in rural areas

While wind energy has long been a staple in the Midwest, solar projects are now outpacing wind installations. Falling solar costs, state incentives, and rapid deployment are driving growth, though wind remains crucial to the region's energy mix. Here are some case studies from rural areas, providing insight into the potential for green energy projects in Mercer County:



- Newton, Iowa – Wind Component Manufacturing: After the Maytag Corporation's closure, Newton embraced wind energy manufacturing, establishing operations for TPI Composites and Arcosa. These companies brought over 1,250 jobs to the area, reviving the local economy. This success shows how wind energy can transform a rural community by creating well-paying jobs and boosting local businesses, a model that could inspire Mercer County.
- Eastern Colorado – Utility-Scale Wind Farms: Colorado's Eastern Plains host over 4.5 gigawatts of wind energy, generating substantial tax revenue for local governments. This revenue has supported schools, infrastructure, and social services, contributing to long-term economic stability in the region. Similarly, Mercer County could benefit from wind projects, providing a steady revenue stream for local services.
- Roadrunner Solar Project, Texas: Located in Upton County, Texas, this 497 MW solar installation provides a consistent revenue stream for the local government and supports businesses in McCamey. This project demonstrates how large-scale solar projects can boost local economies and infrastructure, offering valuable lessons for Mercer County, where solar energy potential exists.
- Chisago County, Minnesota – Solar Energy Development: Chisago County has become a leader in solar energy with the largest solar facility in the Midwest, alongside additional rooftop solar installations on local schools. This initiative has provided significant cost savings for the county. This model of integrating solar energy into public infrastructure could be replicated in Mercer County to reduce operational costs and promote sustainability.

Case studies from Iowa, Colorado, Texas, and Minnesota highlight the transformative economic benefits these projects can bring. As Mercer County considers its renewable energy future, it can look to these examples for inspiration, tailoring projects to fit local needs and leveraging existing resources to maximize economic and environmental outcomes.

Getting to Know Mercer County

a landscape of farmland & small towns

Mercer County, Illinois, embodies the essence of rural Midwestern America, with a population of about 15,000 people spread across small towns and villages. The county's identity is deeply rooted in agriculture, with strong community bonds and a focus on both economic and environmental development. Positioned in the western part of Illinois, Mercer County spans 570 square miles of fertile land, primarily devoted to cropland, with gently rolling prairies and scenic views, bordered by the Mississippi River to the west. Aledo, the county seat and largest town with a population of 3,500, serves as the county's administrative and commercial hub, while other towns and villages play vital roles in supporting the agricultural economy.



Mercer County's landscape and geography make it particularly suited for both agricultural productivity and the potential development of green energy projects. With expansive open spaces and fertile soil, the county is home to crops such as corn and soybeans, as well as livestock farming. This agricultural foundation not only drives the local economy but also presents opportunities for dual land use, including the installation of renewable energy projects such as solar and wind farms.

In Mercer County, Illinois, transitioning agricultural land to renewable energy can be challenging, as farming remains central to the economy and culture. While interest in solar and wind farms is growing, discussions over land use and balancing economic and environmental priorities highlight the complexities of integrating renewables into this rural landscape.

The impact of fossil fuels and gas emissions is evident through various activities integral to rural life. Agricultural operations, a cornerstone of the local economy, rely heavily on diesel-powered machinery and fertilizers, contributing to greenhouse gas emissions such as carbon dioxide, methane, and nitrous oxide. Transportation is another significant source, as the movement of goods and people across the county often depends on fuel-powered trucks and vehicles. Many rural homes in Mercer County rely on fossil fuels like propane, heating oil, or natural gas for heating, particularly during the region's cold winters, adding to the area's overall emissions. Additionally, industrial activities, though less prevalent than in urban areas, include manufacturing and processing that release pollutants into the air. Waste management practices, such as the open burning of waste, which can be common in rural areas, further contribute to harmful particulates and greenhouse gases. Collectively, these activities affect local air quality and health and have broader implications for climate change, underscoring the need for sustainable solutions.

populations & green energy assets

The various towns in Mercer County offer unique opportunities for renewable energy projects:

- Aledo, with its municipal infrastructure and skilled workforce, is ideal for solar farm development and rooftop solar installations.
- Viola and New Windsor, with open, flat land and strong agricultural bases, are well-suited for solar and wind projects. The community's support for renewable energy can foster sustainable growth.
- New Boston, located along the Mississippi River, offers opportunities for hydroelectric power in addition to solar and wind energy development.
- Keithsburg, also near the river, benefits from open spaces that are ideal for solar energy projects and small wind turbines.
- Joy has ample farmland for agrivoltaics, where solar energy and farming can coexist on the same land, demonstrating the potential for sustainable farming and energy production.
- Seaton and Alexis, with their agricultural land, could host solar farms or biogas projects (for example converting animal manure into energy to power homes or businesses). These towns also have the potential for community-driven energy solutions.
- Sherrard and Matherville are positioned to benefit from both wind and solar energy, with educational infrastructure in Sherrard supporting renewable energy demonstrations.

Mercer County Socioeconomics

Mercer County has an unemployment rate of 5-6%, which is higher than the state and national averages. The county's poverty rate is also slightly above the state average, with a median household income of approximately \$67,000, lower than the Illinois median. The major employers in the area include the Mercer County School District and Sherrard School District, as well as MercyOne Genesis healthcare facilities and Mercer County government. Most manufacturing jobs are provided by General Grind & Machine, a precision machining company. Retail and service providers, as well as a number of local restaurants, contribute to the county's economy.

Despite economic challenges, Mercer County's agricultural base, along with its strategic vision for tourism and economic growth, provides an ideal foundation for green energy projects.

These projects not only offer opportunities to diversify the local economy but also align with the county's focus on sustainability and environmental stewardship.





COVID-19 & inflation impacts

The onset of the COVID-19 pandemic disrupted the county's economy, affecting small businesses, local retail, and agricultural operations. Many local businesses faced temporary closures, reduced hours, and decreased revenue, which led to financial stress on households that depend on these local services. Farmers experienced market volatility and logistical challenges that impacted crop prices and food supply chains. The subsequent rise in inflation has compounded these challenges, with higher costs for essential goods, agricultural inputs, and fuel, leading to tighter profit margins for farms and small enterprises. The increased cost of living has strained household budgets, particularly for low-income families and those on fixed incomes.

On the Rise to 2030

The "On the RISE to 2030" strategic plan outlines Mercer County's vision for economic revitalization through four key pillars: business development, tourism enhancement, infrastructure progression, and community elevation. Green energy projects can play a crucial role in achieving these goals:

Business Development

Green energy projects like solar farms, wind turbines, and waste-to-fuel facilities can diversify the county's economy by attracting investment and creating new business opportunities. These projects will also provide alternative income sources for farmers and small businesses, driving growth in the agricultural sector and beyond.

Tourism Enhancement

Renewable energy projects can serve as points of interest for eco-tourism, attracting visitors to learn about sustainable practices. Solar and wind farms could be used as models of renewable technology, boosting local businesses in hospitality and recreation.

Infrastructure Progression

The growth of renewable energy in Mercer County requires modernizing the infrastructure, including expanding the energy grid, improving roadways for energy site access, and upgrading public utilities. These enhancements can create both short-term construction jobs and long-term economic growth.

Community Elevation

Green energy projects support environmental stewardship, reduce energy costs, and engage the community in sustainability efforts. By creating local jobs and improving air quality, these projects help elevate the quality of life for county residents.

agritourism, agribusiness & green energy opportunities

Mercer County is fostering innovative economic development by combining agriculture and tourism, which offers a unique opportunity to integrate green energy practices. A local tourism and marketing initiative has been successful in promoting the county's businesses and attractions, organizing events that emphasize its agricultural heritage. These events and local businesses, including a u-pick flower farm and a market selling local produce and crafts, could significantly benefit from adopting green energy solutions. By incorporating solar panels or wind turbines, these businesses could lower their operational costs, reduce their carbon footprint, and position themselves as sustainable, environmentally friendly destinations. This would appeal to the growing market of eco-conscious tourists, creating an opportunity for the county to attract visitors while promoting its commitment to sustainability.

Agritourism offers a natural synergy with green energy solutions. For instance, integrating solar power with agricultural operations such as farm-to-table initiatives, or using wind energy for irrigation systems, could help reduce energy costs while maintaining the authenticity of rural life. Additionally, incorporating renewable energy into agribusiness operations could enhance the appeal of farms as "green" destinations, where visitors can learn about both farming and sustainable energy practices.

Mercer County's agricultural sector is poised to play a significant role in supporting green energy solutions. Local manufacturing facilities, such as those involved in metal fabrication and precision machining, could be expanded to produce components for solar panels or wind turbines. This would not only create jobs in the clean energy sector but also strengthen the county's economic standing by blending its agricultural and industrial capacities with the growing green energy market. Through these efforts, Mercer County could position itself as a leader in both agriculture and sustainable energy, fostering long-term economic growth while ensuring environmental stewardship.



agricultural rural green energy initiatives

Mercer County's efforts mirror the success stories of other agricultural Midwestern communities. For example:

- Iowa has embraced utility-scale solar projects like the 127 MW Wapello Solar facility, which provides significant lease income to farmers and allows them to continue farming while earning predictable, long-term revenue.
- Minnesota's Solar Grazing Initiative integrates sheep grazing with solar farms, increasing land productivity while reducing land maintenance costs.
- Illinois has seen success with wind energy projects such as the Twin Groves Wind Farm in McLean County, which spans over 22,000 acres and generates significant revenue for local farmers and communities.
- Missouri's Roeslein Alternative Energy Project captures biogas from hog farming operations and converts it into renewable natural gas, offering a model for Mercer County to follow in waste-to-fuel projects.



Understanding SOLAR ENERGY



Solar energy captures sunlight using photovoltaic (PV) panels or concentrated solar power (CSP) systems, converting sunlight into electricity. As a renewable energy source, solar offers numerous environmental benefits by generating clean, emission-free power, but it also comes with challenges related to land use and intermittency.



the facts

**AVERAGE PER
ACRE LEASE PER
YEAR**

\$1,000

**EXAMPLE FARM
SIZE**

80 acres

**LENGTH OF
COMMITMENT**

25 years

**ADDITIONAL
MEGAWATT
PRODUCTION
REVENUE PER YEAR**

\$26,000

**CONSTRUCTION
TIME PERIOD**

6 months - 1 year

**25 YEAR INCOME
BENEFIT**

\$2,650,000

*Numbers are averaged based on multiple sites and companies and do not account for expected annual increases

*Reference appendices for equations on how totals were reached.

a solar farm in Wapello

a testament to the power of green energy initiatives

The Wapello Solar Farm, established in 2019, and situated directly West of Mercer County, represents a significant stride towards renewable energy adoption in Iowa, showcasing the potential of solar energy to reshape the region's energy landscape. This project emerged from a collaborative effort among local stakeholders, including government officials, energy developers, and community members, all united in the goal of harnessing solar power to meet growing energy demands and promote sustainability.

This solar farm has successfully positioned itself as a crucial contributor to the local energy grid, capable of generating 127 megawatts of energy. With a total capacity that can power 30,000 to 40,000 homes, the Wapello Solar Farm exemplifies how solar technology can be effectively integrated into a community's energy mix. Its establishment aligns with Iowa's commitment to renewable energy, reflecting a proactive approach to reducing carbon emissions and promoting a sustainable future.

One of the standout successes of the Wapello Solar Farm is its role in job creation. During the construction phase, the project generated numerous employment opportunities, providing jobs in installation, maintenance, and operations. This influx of jobs not only bolstered the local economy but also fostered a sense of community involvement as residents participated in the transition to renewable energy. Additionally, the ongoing operation of the solar farm continues to support local employment, contributing to economic stability.

Financially, the solar farm has also made a considerable impact on the local economy.

It has introduced a new stream of tax revenue that can be reinvested into community services, infrastructure, and educational initiatives. This financial benefit enhances the overall budget of Wapello, allowing for improvements in public amenities and services, which further enhances the quality of life for residents.

Community engagement has been a vital aspect of the Wapello Solar Farm's development. Project leaders have actively sought input from local residents, facilitating discussions and information sessions to address concerns and share the benefits of solar energy. This transparent approach has helped to cultivate a supportive atmosphere within the community, reinforcing the importance of collaboration in achieving renewable energy goals.

Despite its many successes, the Wapello Solar Farm has encountered challenges along the way. Community concerns about land use and the visual impact of solar panels have arisen, as some residents express apprehension about the aesthetics of large solar installations. Addressing these concerns is essential for maintaining community support and ensuring that the benefits of the solar farm are widely recognized.

The financial backing of the Wapello Solar Farm is a combination of private investments and state and federal incentives aimed at promoting renewable energy projects. These financial mechanisms have been crucial in securing the necessary capital for construction and ongoing operations, enabling the solar farm to thrive within a competitive energy market.





Photo courtesy: solarbuildermag.com, April 2021

The community impact of the Wapello Solar Farm extends beyond economic benefits. It represents a commitment to environmental stewardship, fostering a sense of pride among residents as they participate in a sustainable energy future. The solar farm contributes to a broader regional effort to embrace clean energy sources, aligning with Iowa's ambitious renewable energy goals and helping to position the state as a leader in sustainability.

In terms of return on investment (ROI), the Wapello Solar Farm presents a complex picture. While initial capital costs can be significant, the long-term benefits—such as stable energy production, tax revenue, and reduced carbon emissions—create a compelling case for its financial viability. The environmental ROI, characterized by decreased reliance on fossil fuels and improved air quality, enhances the overall value of the project to the community and the region.

In conclusion, the Wapello Solar Farm serves as a vital example of how solar energy can transform local energy landscapes while promoting economic and environmental sustainability. Through its contributions to job creation, community engagement, and financial stability, the solar farm stands as evidence to the power of renewable energy initiatives. As it continues to operate and evolve, the Wapello Solar Farm offers valuable insights for other communities considering similar projects, illustrating the potential for solar energy to play a pivotal role in a sustainable future.

PROS

- **Agrivoltaics:** Solar panels can coexist with agricultural land use, allowing for farming or grazing beneath the panels. This system helps preserve farmland while generating renewable energy.
- **Minimal Community Resistance:** Compared to wind turbines, solar projects tend to face less opposition from communities due to fewer concerns about noise, aesthetics, and visual disruption.
- **Landowner Lease Payments:** Solar farms offer attractive financial incentives for landowners. Lease payments for land used in solar projects can range from \$500 to \$1,200 per acre annually. For example, a 100-acre solar farm could provide \$50,000 to \$120,000 per year in lease payments to local farmers or landowners.
- **Tax Revenue:** Solar farms contribute to the local economy through increased property taxes, which support public services like schools, infrastructure, and road maintenance. Solar projects may result in an additional \$1,000 to \$2,000 per MW of electricity generated in annual tax revenue.

CONS

- **Land Use Conflicts:** Solar farms require large tracts of land. In rural areas, this can conflict with agricultural use and preservation, although dual-use systems like agrivoltaics can mitigate this.
- **Intermittency:** Solar energy is only produced when sunlight is available, which can create challenges for grid stability. Solar energy storage solutions, like batteries, are essential but come with added costs.
- **Decommissioning:** At the end of a solar farm's life cycle (typically 25-30 years), the disposal of old panels can contribute to e-waste, and local recycling options may be limited.



Understanding WIND ENERGY

Wind energy harnesses the kinetic energy of moving air to turn turbines, which generate electricity. Wind energy is particularly effective in rural areas with consistent wind speeds, such as the Midwest. While it offers substantial clean energy production, wind energy projects also present certain community challenges related to visual appearance and noise.



the facts

AVERAGE LEASE PER YEAR

\$17,000

*Average based on gradient payments over time on 1 turbine; 1 turbine can be installed per 100 acres

EXAMPLE FARM SIZE

80 acres

LENGTH OF COMMITMENT

25 years

ADDITIONAL MEGAWATT PRODUCTION REVENUE PER YEAR

\$16,250

CONSTRUCTION PERIOD TIME

9 years

25 YEAR INCOME BENEFIT

\$831,250

*Numbers are averaged based on multiple sites and companies and do not account for expected annual increases

*Reference appendices for equations on how totals were reached.

a wind farm in Knox County

a model for other communities

The Knox County Wind Farm, situated in western Illinois, stands as a significant milestone in the region's journey toward renewable energy. Established in 2021, this project represents not only a shift in energy production but also a broader commitment to sustainable practices. The development of the wind farm arose from a collaborative effort involving local stakeholders, including county officials, energy companies, and residents, all aimed at harnessing the area's robust wind resources. This initiative marked a transformative moment for Knox County, transitioning from traditional agricultural practices to incorporating innovative energy solutions.

The wind farm has successfully contributed to the local energy grid, generating a substantial amount of renewable energy. Comprising multiple turbines that collectively produce hundreds of megawatts, the facility has effectively provided clean energy to thousands of homes. This level of energy production is a demonstration of the favorable wind conditions present in the region, validating the decision to invest in wind energy.

In addition to its energy output, the Knox County Wind Farm has played a crucial role in job creation. The construction and ongoing operation of the facility have generated both temporary and permanent jobs, boosting the local economy and providing employment opportunities in various fields, including installation, maintenance, and support services. Moreover, the wind farm has significantly increased tax revenue for Knox County. This influx of funds has been reinvested into local infrastructure, schools, and community services, thereby enhancing

the county's budget and positively impacting public services.

Community engagement has been a pivotal element of the wind farm's development. Throughout the planning and implementation phases, project leaders facilitated public meetings and informational sessions, allowing residents to voice their opinions and learn about the benefits of wind energy. This proactive approach has fostered a sense of ownership and support among community members, essential for the project's success.

However, the wind farm has not been without its challenges. Community opposition emerged from residents concerned about the visual impact of the turbines, noise levels, and potential effects on local wildlife. Addressing these concerns has become a critical aspect of ongoing community relations, as project leaders work to balance the benefits of renewable energy with the community's preferences and environmental considerations.

The wind farm operates in a competitive energy market, facing challenges from other renewable sources, particularly solar energy, which can sometimes provide lower costs for energy production. Navigating this competitive landscape is essential for the sustainability of the project. Additionally, the facility must adhere to stringent environmental regulations and compliance requirements, which can complicate its operations and maintenance.

The funding structure for the Knox County Wind Farm is a blend of private investments and federal incentives designed to promote renewable energy development. Grants and tax credits available for wind energy projects have been instrumental in securing the necessary capital for construction and operation. This financial backing has enabled the project to flourish while ensuring its long-term viability.

The impact of the wind farm on the Knox County community extends beyond economic considerations. It has fostered local pride in sustainability and innovation, as residents witness a significant transition toward greener energy sources. This commitment to renewable energy aligns with broader environmental goals, contributing to a collective consciousness about the importance of sustainable practices. The additional tax revenue generated by the wind farm has facilitated improvements in public services and infrastructure, further enhancing the overall quality of life in the county.

Calculating the return on investment (ROI) for the Knox County Wind Farm involves examining both direct financial gains and indirect benefits. While the facility may encounter fluctuations in energy prices and competition from other sources, the long-term ROI is supported by stable lease payments to landowners, tax revenue, and a reduced reliance on fossil fuels. Additionally, the environmental benefits associated with the project—such as decreased carbon emissions and improved air quality—offer a substantial societal return that extends beyond immediate financial metrics.



In conclusion, the Knox County Wind Farm exemplifies the potential of renewable energy development in Illinois. Despite facing challenges related to community perceptions and market dynamics, the project's successes in energy production, job creation, and community investment highlight its positive contributions to the local economy and sustainability efforts. As the wind farm continues to evolve, it serves as a model for other communities considering similar initiatives, striking a balance between economic development and environmental stewardship.

PROS

- **Job Creation:** Wind energy projects typically has a longer construction period and requires more specialized labor. A single turbine can support 10 to 20 direct construction jobs during installation.
- **Coexistence with Agriculture:** Land used for wind turbines remains available for farming or grazing. Turbines typically occupy a small footprint, allowing agriculture to continue around the turbine.
- **Landowner Lease Payments:** Landowners who lease their land for wind turbines can expect \$10,000 to \$20,000 per turbine annually. For example, a wind farm with 50 turbines could generate \$500,000 to \$1,000,000 in lease payments annually.
- **Tax Revenue:** Wind projects may contribute to local economies by increasing tax revenue for schools, roads, and other public services.

CONS

- **Visual and Noise Concerns:** Wind turbines can be visually intrusive and generate noise, leading to resistance from local residents. Careful siting and community outreach can help mitigate opposition.
- **Wildlife Impact:** Turbines can pose risks to birds, bats, and eagles particularly in migration paths. Strategic siting, pre-construction wildlife studies, and operational measures can help reduce impacts.
- **Infrastructure Needs:** Wind farms require significant infrastructure to connect to the energy grid, and upgrades to local energy transmission may be needed, increasing project complexity and costs.

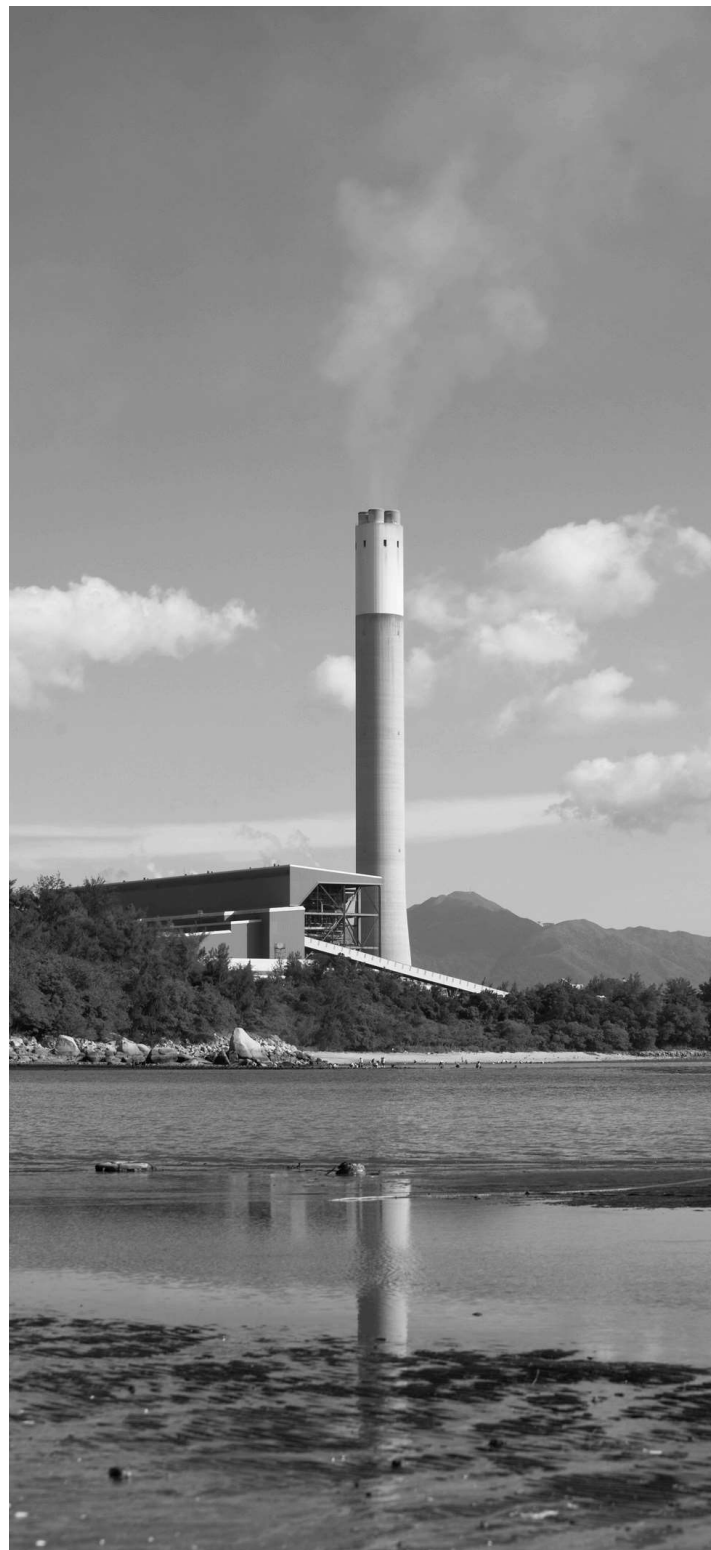
Understanding WASTE-TO-FUEL ENERGY

Waste-to-fuel technology converts organic waste (such as agricultural by-products or municipal waste) into usable forms of energy, including biogas and biofuels. This process reduces landfill waste while generating renewable energy. While waste-to-fuel facilities require large investments in infrastructure, they offer unique economic and environmental benefits.

Waste-to-energy (WTE) and waste-to-fuel (WTF) are two distinct technologies for converting waste into energy, but they differ significantly in process and maturity. WTE involves incinerating waste to generate electricity or heat and has been in use for decades, particularly in countries like Sweden and Japan. However, in Illinois, the last WTE facility closed in 2013 due to environmental concerns and economic challenges, such as the emission of pollutants and difficulty recycling the ash produced.

Waste-to-fuel, a newer technology, uses chemical processes like anaerobic digestion or pyrolysis to convert waste into liquid fuels such as biodiesel or ethanol. While it holds promise, waste-to-fuel remains largely unproven at large scales, with limited commercial success and challenges related to feedstock, cost, and efficiency. The lack of widespread adoption means that waste-to-fuel is still in the experimental phase compared to more established energy conversion methods.

In Illinois, the closure of WTE facilities has left a void in waste-to-energy production, and while there is growing interest in waste-to-fuel, it remains unclear whether this technology can replace the role that WTE once played in the state's waste management and energy systems.





the facts

**AVERAGE PER
ACRE LEASE PER
YEAR**

\$2,000

**EXAMPLE FARM
SIZE**

80 acres

**LENGTH OF
COMMITMENT**

20 years

**ADDITIONAL
MEGAWATT
PRODUCTION
REVENUE PER YEAR**

\$0

**CONSTRUCTION
PERIOD TIME**

7 years

**20 YEAR INCOME
BENEFIT**

\$3,200,000

*Numbers are averaged based on multiple sites and companies and do not account for expected annual increases

resource recovery in Ames

An innovative project that
stands the test of time



The Arnold O. Chantland Resource Recovery Plant (RRP), a pioneering facility established in 1975, stands as an example of innovation in waste management and energy production. This plant transforms municipal solid waste (MSW) into refuse-derived fuel (RDF), which is then utilized at the local power plant to generate electricity. By doing so, it significantly lessens Ames' reliance on landfills, showcasing a sustainable approach to waste management.

One of the most striking achievements of the Ames RRP is its ability to divert approximately 60% of the waste collected in the community from landfills. This impressive figure not only mitigates the environmental impact of waste decomposition—reducing harmful methane emissions—but also harnesses this waste to produce electricity, thereby powering local homes and businesses. This dual benefit aligns seamlessly with Ames' sustainability goals, reflecting a community dedicated to responsible environmental stewardship.

The plant's influence extends beyond energy production. Initiatives like the Rummage RAMPAGE, which promotes the reuse and resale of goods, further enhance waste diversion efforts. In just one year, this program successfully diverted over 116,000 pounds of items from landfills, reinforcing a culture of sustainability within the community.

Operationally, the RRP provides a regulated and local solution for waste disposal, a compelling argument for sustainability when contrasted with the emissions associated with transporting recyclables over long distances. The plant's commitment to local waste management strengthens the community's economic stability and promotes cooperation among regional waste management efforts. However, the path to success is not without its hurdles.

The economic viability of producing energy from RDF poses significant challenges. Currently, the production cost sits at around 6 cents per kilowatt-hour, which is notably higher than the market average in the Midcontinent Independent System Operator (MISO) energy network, where prices can drop below 3 cents. This price disparity can create financial strain, especially in a region rich with cheaper renewable energy sources like wind.

Additionally, the community's perceptions of the RRP reveal complexities. While many residents recognize the importance of waste-to-energy solutions, some sustainability advocates express concerns about the emissions associated with burning waste, urging a greater focus on recycling and waste reduction instead. This highlights an ongoing dialogue within the community about the best strategies for sustainable waste management.

Regulatory oversight also plays a critical role. The plant must adhere to strict environmental regulations to control emissions from burning waste, adding another layer of operational complexity.

Despite these challenges, the Ames RRP plays a vital role in the local economy. It provides direct employment for approximately 25 staff members who manage the operations, including waste sorting and fuel production. Beyond these direct jobs, the facility generates indirect employment opportunities in maintenance, trucking, and waste management services.

The economic impact of the RRP cannot be overstated. By processing waste locally, the plant reduces the community's reliance on landfills, leading to a more sustainable regional waste management strategy. This approach not only promotes financial sustainability for Ames but also reinforces community ties as residents come together to support innovative solutions for waste management.



Photo courtesy of the City of Ames

While the RRP effectively reduces landfill use and contributes to energy production, assessing its financial return on investment is more nuanced. The fluctuations in the energy market mean that the plant often operates at a higher cost compared to wind energy. However, the environmental benefits—such as decreased landfill dependence and lower methane emissions—offer a substantial return on investment that aligns with the community's long-term sustainability goals. Ames stands as a leader in sustainable waste management practices, demonstrating a commitment to innovative solutions despite the financial complexities involved.

In summary, the Ames Resource Recovery Plant exemplifies a community-focused approach to waste management that marries innovation with sustainability. While it faces financial challenges and community scrutiny, its success in reducing landfill waste by 60% and generating renewable energy paints a compelling picture of a community dedicated to environmental stewardship. The RRP serves as a valuable case study for other regions, like Mercer County, in evaluating the feasibility of similar waste-to-fuel projects, particularly in weighing the environmental benefits against economic sustainability. This model not only reflects the potential for sustainable waste management but also illustrates the complexities and trade-offs that accompany such initiatives.



Photo from the Ames Tribune



PROS

- **Job Creation:** Waste-to-fuel facilities create significant long-term employment. A large facility can support 150 to 300 direct construction jobs and 80 to 150 permanent operational jobs.
- **Dual Environmental Benefits:** These plants reduce landfill waste and generate renewable energy, addressing two major environmental concerns—landfill overflow and greenhouse gas emissions.
- **Landowner Income:** Waste-to-fuel projects offer financial incentives through land lease payments, similar to solar and wind projects. Landowners can receive \$1,000 to \$2,000 per acre annually depending on facility size and location.
- **Economic Growth:** Waste-to-fuel projects provide higher-wage jobs, long-term employment, and potential local revenue through tipping fees (fees paid by waste haulers to deliver waste to the facility).

CONS

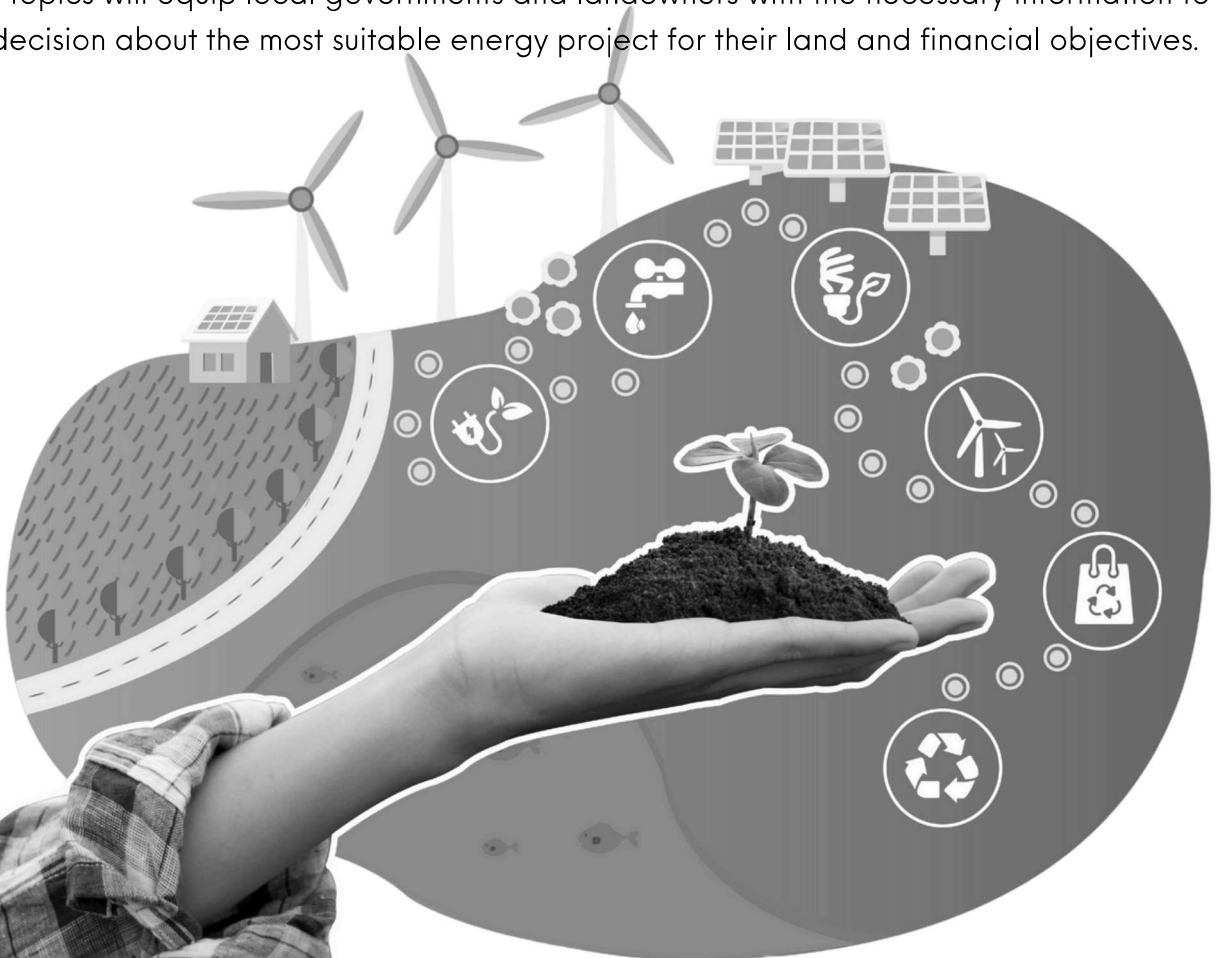
- **Community Opposition:** These plants often face opposition due to concerns about odor, increased truck traffic, and emissions from the conversion process. Advanced technology and careful planning can mitigate these issues.
- **High Infrastructure Costs:** Waste-to-fuel facilities require significant upfront investments in infrastructure, including waste processing and energy conversion technology, which can delay the financial return on investment.
- **Long-Term Commitment:** Unlike wind and solar projects, waste-to-fuel facilities require long-term land leases, typically locking in land use for several decades with no formal decommissioning plans.

Comparing ALL ENERGY OPTIONS

When considering renewable energy options for a rural community, wind, solar, and waste-to-fuel energy each present unique benefits and challenges. This section aims to present a side-by-side comparison of all three options.

When evaluating the potential for solar, wind, or waste-to-fuel projects on a given piece of land, several key topics should be considered to support informed decision-making. This summary will address important factors such as direct revenue from lease payments, along with both direct and indirect economic impacts of each energy project. It will also explore decommissioning considerations to provide clarity on long-term obligations.

Additionally, the analysis will examine job creation and workforce sustainability, as these elements can have a significant effect on the local economy and the project's stability. Finally, key insights will be offered regarding how each energy source impacts the land's future use and integration with the surrounding community. These topics will equip local governments and landowners with the necessary information to make a well-informed decision about the most suitable energy project for their land and financial objectives.



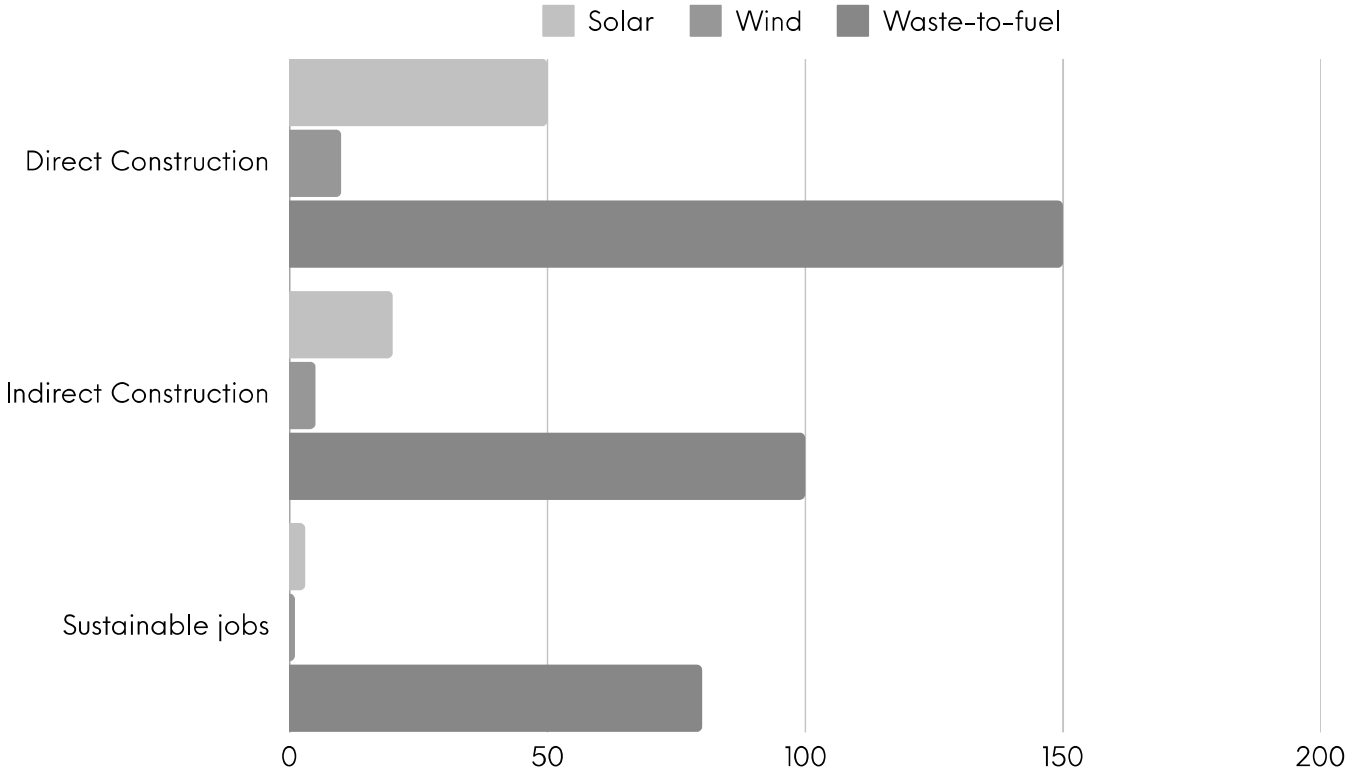
direct revenue comparison

80 acres

20-25 years

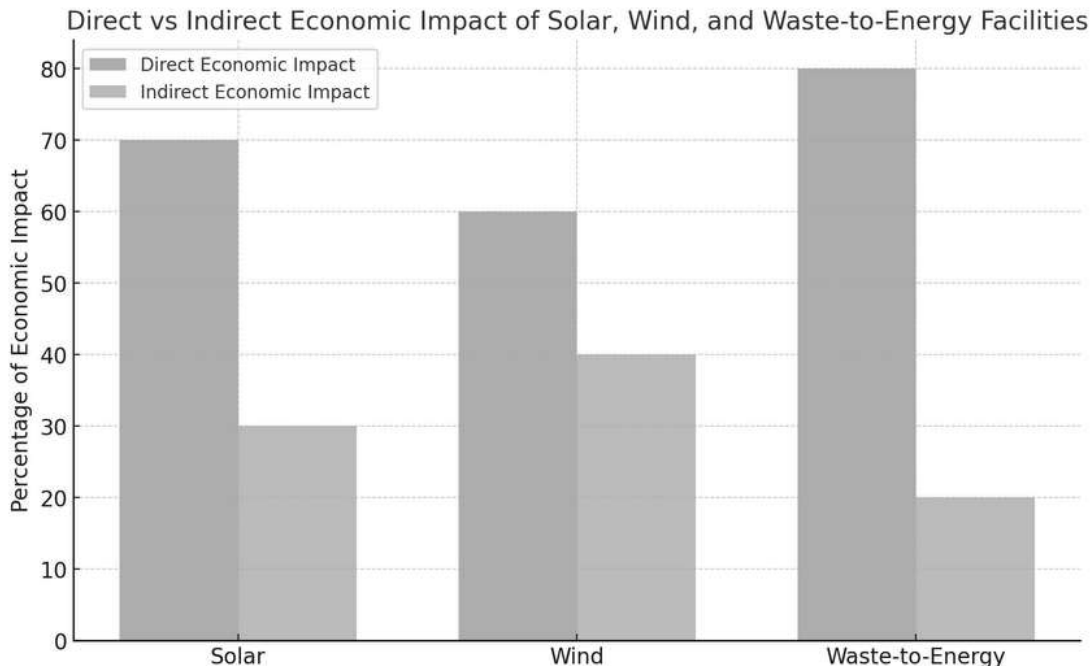
2 solar farms>	\$2,650,000
1 wind turbine>	\$831,250
1 waste facility>	\$3,200,000

potential job creation



US Department of Labor Statistics

direct & indirect economic impact



Economic Impact Factor	Solar	Wind	Waste-to-Energy
Construction Jobs	High (large workforce)	Moderate (specialized labor)	High (facility construction)
Operational Jobs	Moderate (ongoing maintenance)	Moderate (ongoing maintenance)	High (facility operation)
Facility Revenue (Lease/Taxes)	Moderate (based on land use and energy production)	High (ongoing revenue from energy)	High (due to waste processing fees and energy production)
Local Worker Spending	Moderate (workers spend in local economy)	High (due to higher number of specialized workers)	Moderate (workers spend locally)
Supply Chain Impact	Moderate (solar panel and material suppliers)	High (specialized turbine suppliers and materials)	Moderate (equipment, waste processing needs)
Business Stimulation	Low (limited business ripple)	Moderate (local businesses supporting workers)	Moderate (local service needs from workers)

job creation

Solar Energy

Construction Jobs: The development of a solar farm creates a substantial number of direct construction jobs across various trades, including electrical work, installation, and site preparation. Additionally, several indirect jobs are generated in material supply, logistics, and support sectors.

Operations Jobs: Once operational, a solar farm requires a smaller workforce for ongoing maintenance, monitoring, and repairs. These roles are essential to ensuring the system operates efficiently over its lifespan.

Long-Term Job Impact: While solar farms do not require a large ongoing workforce, the maintenance and service jobs contribute to a stable local economy. Additionally, the demand for materials and construction services during the installation phase provides a temporary boost to the local economy.

Wind Energy

Construction Jobs: Installing a wind turbine generates numerous construction jobs, particularly in turbine assembly, electrical work, and site preparation. Larger wind farms create a significantly higher number of jobs during the construction phase.

Operations Jobs: Wind turbines require a smaller number of part-time operational staff for maintenance. However, for larger wind farms, full-time roles are created, including maintenance technicians and site managers.

Long-Term Job Impact: Wind energy projects create more sustained job opportunities compared to solar, due to the ongoing need for maintenance and repair of turbines. Additionally, wind projects stimulate jobs within the supply chain, including the manufacturing of turbine components and supporting infrastructure.

Waste-to-Fuel Energy

Construction Jobs: Building a waste-to-fuel plant creates a significant number of construction jobs, including civil engineers, equipment installation teams, and environmental specialists. The supply chain also benefits from additional jobs in materials, transportation, and logistics.

Operations Jobs: Waste-to-fuel facilities create a large number of permanent jobs, spanning across waste processing, plant management, maintenance, and environmental oversight roles.

Long-Term Job Impact: Waste-to-fuel facilities provide long-term employment opportunities in various sectors, including waste management, plant operations, and ongoing maintenance. The plant also contributes to the local economy by stimulating demand for housing, transportation, and retail services.

stimulating economic development

As Mercer County explores the potential of leasing land for renewable energy projects, it's important to consider the broad, long-term benefits these projects can bring to the local economy and workforce sustainability. Green energy projects—whether solar, wind, or waste-to-fuel—have the ability to stimulate economic growth across several key areas.

First, renewable energy projects can drive significant infrastructure upgrades with funds that are often provided by the energy company. Roads and utilities may need to be improved or expanded to accommodate the construction and operation of these facilities, which not only benefit the energy projects themselves but also create lasting improvements to the county's overall infrastructure. These improvements can have a ripple effect, boosting the local economy by improving access to other businesses and services.

The construction phase of any green energy project is a major driver of job creation. Building solar farms, wind turbines, or waste-to-fuel facilities requires a skilled workforce, creating numerous temporary construction jobs. But the benefits don't stop there. These projects also support local supply chains, as materials are sourced and delivered, and construction services are provided. This helps to stimulate local businesses that supply equipment, materials, and services during the construction period.

Once operational, renewable energy projects provide ongoing employment opportunities in maintenance, management, and monitoring. These operational jobs are typically stable, offering long-term career paths that help reduce unemployment and provide steady income to local workers. This also creates further economic activity as workers spend their wages in the local community, supporting retail, housing, transportation, and other services.

Leasing land for a green energy project also creates consistent revenue streams for local landowners and governments. Lease payments to landowners can provide reliable income, while the increased tax revenue generated from these projects can support local schools, roads, and essential services, benefiting the community as a whole.

Additionally, long-term job creation and economic activity stimulate local businesses, from construction companies to service providers. As the energy projects continue to operate and grow, they provide a steady demand for local products and services, helping to stabilize and diversify the local economy.

For local governments, leasing land for renewable energy projects offers an opportunity to both increase revenue and contribute to long-term community sustainability. These projects not only generate immediate economic benefits but also lay the foundation for a more resilient workforce and a diversified economy, all while positioning Mercer County as a leader in the growing field of sustainable energy.

decommissioning comparison

Factor	Solar Farm (35 Acres)	Wind Turbine (Single)	Waste-to-Fuel Facility
Timeframe for Decommissioning	2-3 months	3-6 months	6-12 months
Cost per Acre/Turbine	\$10,000 - \$30,000 per acre	\$100,000-\$300,000 per turbine	\$200,000-\$500,000 (depends on facility size and complexity)
Land Restoration Complexity	Moderate, depends on site and infrastructure removal	High, requires removal of deep foundations	Moderate to high, depends on site and infrastructure removal
Components Involved	Panels, inverters, mounting structures	Turbine blades, nacelle, tower, foundation	Facility structures, tanks, piping, waste processing equipment
Recycling and Disposal	Panels are easier to recycle, some challenges	Turbine blades are difficult to recycle, costly disposal	Facility equipment can be decommissioned, but certain materials (e.g., tanks) may require specialized disposal
Labor and Equipment	Less specialized labor needed	Requires heavy machinery and specialized labor	Requires demolition and removal of large facility structures, specialized labor for handling waste equipment
Regulatory Compliance	Low regulatory impact	High regulatory compliance due to environmental and safety concerns	High, due to environmental, health, and safety standards related to waste processing
Post-Decommissioning Land Use	Land often returned to agriculture or other uses	Land often remains suitable for agricultural use, but requires foundation removal	Land may be repurposed for industrial, agricultural, or energy-related uses, depending on zoning regulations

lessons learned

Mercer County stands to benefit greatly from implementing renewable energy projects, but several key considerations must be made to ensure sustainable development and community acceptance.

Land Use and Preservation: Renewable energy projects will affect agricultural land, but careful planning can minimize negative impacts. Dual-use systems like agrivoltaics for solar or wind turbines on agricultural land can allow for continued farming while generating renewable energy.

Economic Diversification: Green energy projects offer an opportunity to diversify Mercer County's economy by creating new industries, jobs, infrastructure development, and tax revenue streams. These projects will help reduce reliance on traditional industries and attract investments in green technologies.

Transparent Communication: Early communication with the community is vital to reduce opposition and foster support for renewable energy projects. Addressing concerns about land use, aesthetics, noise, and environmental impacts through transparency and collaboration will help build local trust.

Infrastructure Future-Proofing: By securing funding for roadway repairs or other infrastructure needs in land-lease negotiations, it can future-proof and ensure that the county meet the demands of these renewable energy projects long-term.

Waste-to-Fuel Feasibility: Findings did not support the feasibility of the proposed waste-to-fuel facility in terms of the amount of waste required regionally to operate. Also, Waste-to-fuel technologies are new, most untested, posing risks in adoption.

Lack of Engagement: When attempting to gather information from local leadership, regional stakeholders and community members, an apprehension to participate was apparent, making it difficult to envision which project, if any, is realistic for the county. If a potential project presents itself, it is imperative that the county board more purposefully and deeply engage with all entities of local government.

Proactive Efforts: Green energy is not going away. Staying privy of trends, developments and local projects in this area. By not capitalizing on opportunities, technology and community advancements will continue on, potentially leading to missed opportunities for local government.

Negotiating Support: Local government can be advocates for residents who are considering green energy projects. Negotiations committees are proven strategies that have empowered communities with knowledge and resources to support effective decisions.



Preparing

MERCER COUNTY FOR GREEN ENERGY

prepare legally

prepare for disputes

prepare for risks

prepare the site





prepare legally

- **Review Zoning Regulations:** Ensure compliance with local setbacks and zoning laws for solar, wind, and waste-to-fuel projects. For solar and wind, setbacks should be established for distances from residential areas, particularly for wind turbines.
- **Update Zoning Codes:** Revise zoning laws to proactively regulate renewable energy projects. Include guidelines for setbacks, height restrictions, and construction timelines to avoid confusion and last-minute legal disputes.
- **Waste-to-Fuel Regulations:** Ensure waste-to-fuel facilities comply with regulations regarding waste processing, air emissions, water management, and animal by-product handling. Special attention should be given to proximity to agricultural facilities like hog farms and processing plants, particularly in areas with high livestock activity.
- **Permit Compliance:** Work with legal teams to ensure all renewable energy projects adhere to local, state, and federal permit requirements. This includes Environmental Impact Assessments (EIAs) and, when applicable, archaeological surveys for culturally or historically significant areas (e.g., the Yellow Banks along the Mississippi River).
- **Collaboration with Neighboring Areas:** Coordinate with surrounding counties and regional authorities to ensure alignment with broader energy goals, share best practices, and prevent conflicts in zoning, land use, or grid integration.

prepare for risks

Solar Farms

- Intermittency Risk: Address the intermittency of solar energy due to cloudy weather and winter conditions.
 - Mitigation: Implement energy storage systems, such as battery storage, to store excess energy during peak production and supply it during low-production periods.
- Land Use Conflicts: Consider the impact of solar installations on agricultural land.
 - Mitigation: Use agrivoltaic systems that allow for dual use of land—farming or grazing beneath solar panels—thereby preserving agricultural productivity while generating renewable energy.
 - Siting: Promote siting on more marginal lands.

Wind Turbines

- Noise and Visual Impact: Address concerns related to the noise and visual impact of wind turbines on local communities.
 - Mitigation: Implement strategic siting of wind turbines away from residential areas and public education campaigns to communicate the minimal long-term disruption that wind farms cause.
- Wildlife Impact: Evaluate and mitigate the impact of wind turbines on birds and bats, particularly migratory species.
 - Mitigation: Conduct wildlife studies prior to construction to identify migration corridors and avoid siting turbines in high-risk areas. Use turbines with minimal wildlife impact and adopt mitigation measures such as radar technology to prevent bird strikes.

Waste-to-Fuel Facility

- Odor and Traffic Concerns: Address concerns over odor and the increased truck traffic from daily waste deliveries.
 - Mitigation: Install advanced odor control systems and schedule truck deliveries during off-peak traffic hours to minimize disruption.
- Water Contamination: Mitigate the risk of water contamination from waste runoff.
 - Mitigation: Ensure the facility has appropriate wastewater treatment systems and buffer zones around the facility to protect local water sources.



prepare for disputes

- Early and Transparent Community Engagement:
 - Engage with residents early by hosting town halls and listening sessions to address concerns regarding noise, aesthetics, property values, and environmental impacts. Provide clear communication about project timelines, benefits, and processes.
- Create an Educational Campaign:
 - Develop a public campaign to inform residents about the economic incentives, environmental benefits, and examples of successful projects in similar rural communities. This helps counter misinformation and raises awareness.
- Stakeholder Advisory Committees:
 - Form committees of local farmers, residents, and business owners to guide decision-making and ensure the renewable energy projects align with community priorities.
- Address Visual and Noise Concerns:
 - Visual Buffering and Setbacks: Plan for the strategic placement of wind turbines with visual buffers and appropriate setbacks from residential areas to minimize aesthetic disruption. For solar farms, implement low-profile designs and use landscape buffering.
 - Noise Mitigation: Address noise concerns with modern noise reduction technologies, including scheduled maintenance and operations that minimize disturbance to residents.
- Collaborate with Local Governments and Utilities:
 - Coordinate with Neighboring Counties: Work with neighboring counties to develop shared renewable energy guidelines and prevent inter-county conflicts over land use and grid integration.
 - Engage Local Utilities Early: Collaborate with local utilities early to ensure seamless integration of renewable energy into the grid, minimizing disruptions and addressing infrastructure concerns.
- Adopt a Balanced Zoning Policy:
 - Update Zoning Codes: Revisit zoning laws to ensure that they clearly define the process for wind and solar projects, outlining setbacks, heights, and construction timelines. This provides clarity for developers and reduces the risk of disputes.
 - Local Control with State Alignment: Balance state-level renewable energy initiatives with local concerns by aligning state requirements with local zoning laws, minimizing potential conflicts seen in areas like Piatt County and Iowa.

prepare the site

When developing a green energy project in Mercer County, Illinois, both environmental and historical factors must be carefully considered to ensure sustainability and regulatory compliance.

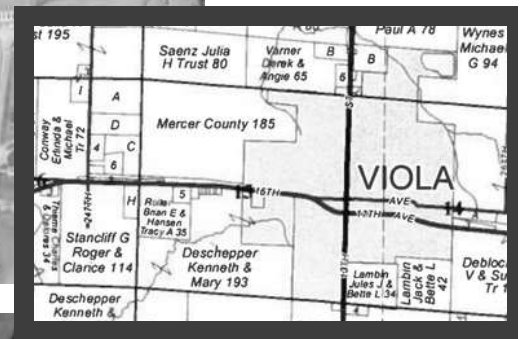
Environmental Review

Solar Energy: Large-scale solar farms may displace vegetation and wildlife habitats, and cause soil erosion and changes to water runoff. Disposal of solar panels, which can contain hazardous materials like cadmium and silicon, raises concerns about waste management.

Wind Energy: Wind turbines can impact bird, bat, and eagle populations and alter local habitats. They may also cause noise and visual pollution, and land clearing for installation can lead to soil compaction.

Waste-to-Fuel: These plants can emit pollutants affecting air and water quality. Managing waste and by-products to avoid contamination is crucial.

Mercer County's geography is largely rural and agricultural, with fertile soils and waterways like the Mississippi River and smaller streams that contribute to its wetlands and floodplains. These water sources are vital for agriculture, and careful planning is needed to avoid soil erosion, contamination, and impacts on aquatic ecosystems.



Potential Project Site Parcel Map/Property Record
151.5 acres at: 2560 Highway 17, Viola, IL 61486
Cropland 98.05 acres
Permanent pasture 42 acres
Other farmland 10.45 acres

Potential Project Site



Below is a preliminary EPA NEPAassist desktop review, analysis of the FEMA flood service map, and review of UST Finder to locate underground storage tanks was completed. (The boundary lines added here are not to scale). Preliminary EPA Desktop Review <https://nepassisttool.epa.gov/nepassist/nepamap.aspx>

Preliminary data on map 1 indicates there are no air pollution or toxic releases noted, no water monitoring stations, and no impaired water point, streams, or waterbodies.



Preliminary data on Map 2 indicates there are no water catchments or aquifers, not transportation infrastructure, and no critical habitat. Water bodies are discussed below.

Preliminary data on Map 3 indicates the wetlands of riverines and a freshwater pond.



Map 4 shows the identification of Dugout Run on the property.

Map 5 shows the identification of Skunk Creek from the Edwards River on the property. There are fresh water streams in the lower or southwest section of the property, and a creek outlet from the Edwards River in the upper or northeast section which would potentially require solid waste management planning and/or mitigation plans to prevent water contamination.



Flood and Soil Concerns

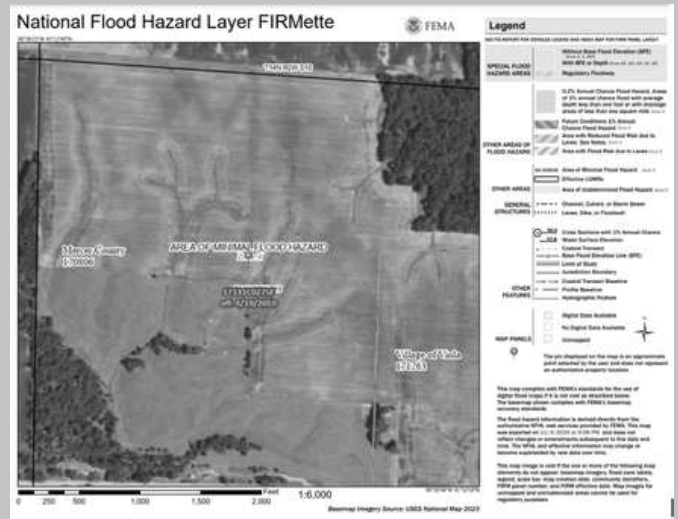
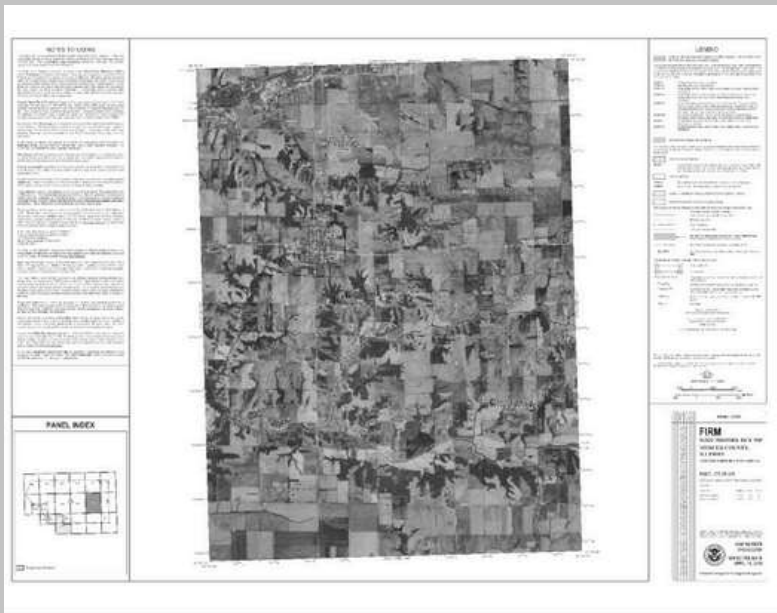
Mercer County experiences periodic flooding, especially near waterways, which can damage infrastructure and disrupt energy production. Understanding flood risks is vital when siting renewable energy projects. Additionally, protecting soil integrity and managing runoff are essential for maintaining the agricultural economy.

In summary, any green energy project in Mercer County must balance environmental protection, historical preservation, and careful land use to ensure sustainable development that respects the county's ecological and cultural heritage.

The FEMA Flood Maps below identify the area as a minimal flood risk.

FEMA Flood Maps

<https://msc.fema.gov/portal/search?AddressQuery=cook%20county%20illinois>



The map below shows there are no underground storage tanks identified on the property.

Underground Storage Tank Finder

<https://epa.maps.arcgis.com/apps/webappviewer/index.html?id=b03763d3f2754461adf86f121345d7bc>



Historical and Archaeological Concerns

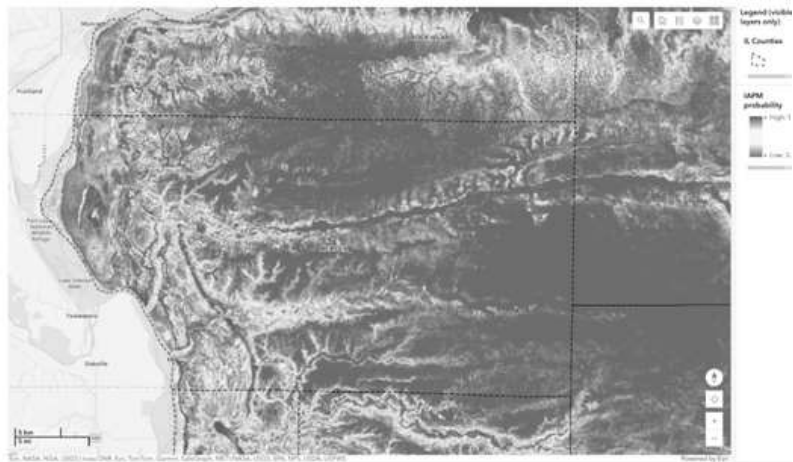
Mercer County has a rich archaeological history with evidence of Native American cultures and early European settlements. Sites may contain prehistoric artifacts, burial grounds, or historic structures. A Phase I Archaeological Survey is required before construction to identify and preserve these sites. This survey involves background research, fieldwork, and documentation of any findings.

Prehistoric Native American cultures, including the Mississippian period, left behind artifacts and earthworks. The region was home to tribes like the Sauk, Meskwaki, and Kickapoo, and the Black Hawk War of 1832 led to the displacement of many Native communities.

European settlers brought agricultural development in the 1800s, leaving behind historic farmsteads, mills, and cemeteries.

Given the county's archaeological significance, development projects must comply with state and federal preservation laws, including the National Historic Preservation Act. A Phase I Survey ensures that cultural resources are protected before any ground is disturbed.

County Archaeological Probability



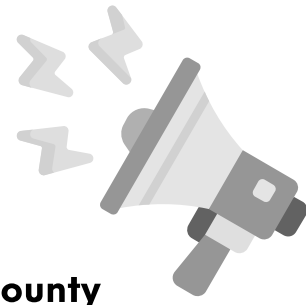
Illinois Archaeological Predictive Model

(IAPM)<https://www.arcgis.com/apps/dashboards/f50cd338decd41edab27e746a5c1ce1f>



Potential Green Energy
Site Archaeological Probability

call to action



Call to Action: Embrace a Sustainable Future for Mercer County

As Mercer County stands at the crossroads of opportunity and innovation, it is imperative for local leaders, residents, and stakeholders to come together to embrace the transformative potential of renewable energy. The insights shared in this comprehensive analysis highlight the interconnectedness of community resilience, economic development, and environmental stewardship.

Take the following actions:

- **Engage in Community Dialogues:** Host and participate in discussions and forums that focus on the benefits and challenges of green energy initiatives. Your voice matters—understanding community sentiment is crucial in shaping projects that reflect local values and priorities.
- **Arm Yourself with Data:** Research and familiarize yourself with credible data as it relates to fossil fuels, gas emissions and other identified contributors impacting the environment.
- **Prioritize Intentional Decision-Making:** As emphasized in this study, intentional decision-making is vital for the successful implementation of green energy projects. Local government should establish clear guidelines that promote sustainable land use and prioritize community needs.
- **Explore Economic Opportunities:** Leverage the potential for green energy to create new economic pathways. By diversifying income sources through renewable energy, Mercer County can enhance its resilience against market volatility, as evidenced by increased property values linked to wind energy payments in other regions.
- **Foster Collaborative Partnerships:** Encourage public/private partnerships to facilitate investment in renewable energy. Collaboration between local governments, businesses, and residents can streamline project development and ensure that the benefits are equitably distributed throughout the community.
- **Commit to Environmental Stewardship:** As stewards of the land, there is a collective responsibility to safeguard the environment for future generations. By adopting a land ethic that values ecological integrity alongside economic growth, Mercer County can lead by example in sustainable practices.

As the county look toward the future, commit to exploring renewable energy and the responsible use of the natural resources. Mercer County could become a leader in innovation and environmental stewardship, inspiring neighboring communities to follow suit. Embrace the opportunity to take the driver's seat in shaping a sustainable future for families, the economy, and the environment of the county.



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direct revenue equations

Solar

Here is a simplified breakdown of all the calculations for revenue from the 80-acre **solar farm** producing 13 MW of power annually, considering both the lease revenue and power production revenue over 25 years.

Step 1: Calculate Annual Lease Revenue

For \$1,000 per acre lease:

Annual Lease Revenue = 80 acres × 1,000 USD per acre = 80,000 USD per year

Step 2: Calculate Annual Revenue from Power Production

For 13 MW of power produced annually, at \$2,000 per MW:

Annual Revenue from Power = 13 MW × 2,000 USD per MW = 26,000 USD per year

Step 3: Total Annual Revenue

Now, add the lease revenue and the power production revenue:

Total Annual Revenue = 80,000 USD (lease) + 26,000 USD (power) = 106,000 USD per year

Step 4: Total Revenue Over 25 Years

For 25 years, multiply the total annual revenue by 25:

Total Revenue over 25 years = 106,000 USD per year × 25 = 2,650,000 USD

Summary:

Annual Lease Revenue: \$80,000

Annual Revenue from Power Production: \$26,000

Total Annual Revenue: \$106,000

Total Revenue Over 25 Years: \$2,650,000

Wind

To calculate the direct revenue for **a single wind turbine** on an 80-acre wind farm with an overall annual lease payment of \$17,000, and considering the MW production of a single turbine:

Assumptions:

Lease Payment: \$17,000 annually for the entire wind farm.

Power Production: Assume one turbine produces 2.5 MW annually (a typical size for a wind turbine).

Revenue per MW: Typically, \$5,000 to \$8,000 per MW annually for wind energy, so we'll use the average of \$6,500 per MW.

Step 1: Calculate Lease Revenue

The annual lease payment for the entire farm is \$17,000. Assuming that the lease covers all turbines on the farm, consider this as the annual lease revenue.

Step 2: Calculate Annual Revenue from Wind Power Production for One Turbine

If one turbine produces 2.5 MW and the average revenue per MW is \$6,500, the annual revenue from wind power production for the turbine is:

Annual Revenue from Wind Power = 2.5 MW × 6,500 USD per MW = 16,250 USD per year

Step 3: Total Annual Revenue (Lease + Power Production)

Now, add the lease revenue for the land and the revenue from power production:

Total Annual Revenue = 17,000 USD (lease) + 16,250 USD (power) = 33,250 USD per year

Step 4: Total Revenue Over 25 Years

Now, multiply the total annual revenue by 25 years:

Total Revenue over 25 years = 33,250 USD per year × 25 = 831,250 USD

Summary:

Annual Lease Revenue: \$17,000

Annual Revenue from Wind Power Production: \$16,250

Total Annual Revenue: \$33,250

Total Revenue Over 25 Years: \$831,250

This provides an estimate of the direct revenue potential for a single wind turbine on an 80-acre wind farm, with a \$17,000 annual lease payment and 2.5 MW of power production, over a 25-year period.

primary data collected

Target Interviews

Interviewee	Benefits identified	Risks identified
Local Farmer	<p>Many green energy options available to local farmers</p> <p>Opportunities for increased revenues</p>	<p>Permanent loss of agricultural producing acreage</p> <p>Contractual conflicts between land owner and renter/farmer</p> <p>Some green energy contracts are fraudulent or misleading</p>
Local Philanthropist	<p>Solar entirely powers his home</p> <p>Received initial energy payments for four years from solar company</p>	<p>Annual energy payments stopped due to selected company closing</p>
Solar Contractor/ Catalyze	<p>Community can tap into the source for energy</p> <p>They can develop on closed landfills and brown fields</p>	<p>They don't do residential property; only commercial</p> <p>Agricultural Impact Mitigation Agreements with the State of Illinois</p>
Wind Contractor/ Cordelia Power & Tenaska	<p>Can keep lease agreements with farmers during 7 year construction period</p> <p>Sign on bonus and they pay the difference in property tax increases</p> <p>Turbines taller than trees, so minimal chopping down No acre minimum</p>	<p>Long construction period but option to void the lease if planning proves project not the right fit</p>
Waste-to-Fuel Contractor/ GreneLily Energy & Water, LLC	<p>Lease payments to land owner</p> <p>Can build a sustainable facility that provided 80-90 full time jobs.</p> <p>Reduces waste to landfills</p> <p>Creates biodiesel fuel for the region and possibly the state</p>	<p>Identification of 3,000 metric tons of waste daily from this region</p> <p>Can not take certain animal by-products and/or glass-would require a separate facility for this type of high temperature processing</p>
Henry County Administrator	<p>Green energy projects (and improvements/revenue from leased land) may provide increased revenue through property tax increase</p>	<p>Road and infrastructure deterioration from heavy trucks during construction/installation phase</p>

Primary data from waste management stakeholders

The tonnage data from Lakeshore Recycling Systems, representing Mercer County and the surrounding nine additional counties, reveals a daily intake of approximately 1,300 tons of waste, or 1,180 metric tons. This includes a mix of municipal, agricultural, and industrial waste types. Additionally, the Tri-County Collection Facility processes 123 tons of recycling daily, which is equivalent to 112 metric tons; and the City of Aledo produces an average daily recycling of 3.9 tons or 3.5 metric tons.

With a goal of 3,000 metric tons of daily waste intake to meet the parameters for a proposed waste-to-fuel facility, the current waste volume falls short. The existing intake capacity does not yet reach the necessary threshold for the facility to operate at scale. To achieve this target, it may be necessary to engage additional partners, particularly from the agricultural business community, to ensure an adequate and sustainable supply of feedstock for the proposed facility. This would help meet the required tonnage and enable the facility to effectively divert waste from landfills while producing renewable energy.

Waste tonnage data

City of Aledo	Mercer County & surrounding 9 counties	Tri-County Collection Facility
Average daily recycling is 3.9 tons. Average daily garbage 10 tons.	Within the 100 mile radius of Mercer County, Illinois, there is an average daily tonnage of waste of 1,300 tons.	Warren, Mercer, McDonough average daily E-cycling and Paint tons is 123 tons.

	Location	Population	Daily Average Tonnage	
Lakeshore Recycling Systems (LRS)	Aledo	3600	10	*** every 5,000 population is about 14 daily tons Average person creates 4 pounds of garbage per day
	Mercer County	15,000	42	
	Rock Island county	140,000	392	
	Henderson County	7000	19.6	
	Warren County	17,000	47.6	
	Knox County	50,000	140	
	Henry County	48000	134.4	
	La Salle	108000	302.4	
	Bureau	32000	89.6	
	McDonough	28000	78.4	
	Hancock	17500	49	
			1305	

City of Aledo - MSW	
Thursday Date:	total tons
01.04.24	8.86
01.11.24	9.98
01.18.24	7.64
01.25.24	9.5
02.01.24	9.67
02.08.24	9.61
02.15.24	7.76
02.22.24	9.49
02.29.24	8.33
03.07.24	9.42
03.14.24	9.39
03.21.24	9.33
03.28.24	8.78
04.04.24	10.27
04.11.24	11.41
04.18.24	8.74
04.25.24	9.48
05.02.24	7.9
05.09.24	9.78
05.16.24	9.97
05.23.24	8.98
05.30.24	8.89
06.06.24	8.72
06.13.24	9.99
06.20.24	8.67
06.27.24	10.23
07.11.24	9.24
07.18.24	9.83
07.25.24	9.41
08.01.24	9.86
08.08.24	10.72
08.15.24	10.4
08.22.24	10.1
08.29.24	9.49
09.05.24	10.48
09.12.24	4.89
09.19.24	9.02
Total	344.23

City of Aledo - MSW	
Wednesday Date:	total tons
01.03.24	9.82
01.10.24	8.83
01.17.24	9
01.24.24	4.43
01.31.24	11.36
02.07.24	11.06
02.14.24	10.65
02.21.24	11.33
02.28.24	10.34
03.06.24	9.9
03.13.24	10.99
03.20.24	11.3
03.27.24	9.81
04.03.24	13.07
04.10.24	10.92
04.17.24	12.64
04.24.24	11.1
05.01.24	12.02
05.08.24	13.96
05.15.24	11.76
05.22.24	11.19
05.29.24	11.01
06.05.24	12.58
06.12.24	10.23
06.19.24	11.98
06.26.24	11.59
07.03.24	11.41
07.10.24	10.91
07.17.24	12.3
07.24.24	14.84
07.31.24	17.9
08.07.24	11.39
08.14.24	11.06
08.21.24	11.12
08.28.24	11.24
09.04.24	11
09.11.24	9.73
09.18.24	11.39
Total Tongs	427.16

City of Aledo - RCY	
Thursday Date:	total tons
01.03.24	6
01.10.24	1.9
01.17.24	2.29
01.24.24	9.26
01.31.24	3
02.07.24	2.92
02.14.24	2.65
02.21.24	2.57
02.28.24	2.26
03.06.24	2.61
03.13.24	2.5
03.20.24	3.69
03.27.24	4.57
04.03.24	3.32
04.10.24	5.7
04.17.24	2.52
04.24.24	5.56
05.01.24	3.01
05.08.24	5
05.15.24	4.74
05.22.24	4.44
05.29.24	7.43
06.05.24	5.08
06.12.24	5.18
06.19.24	2.06
06.26.24	3.23
07.03.24	3.19
07.10.24	3.17
07.17.24	5.32
07.24.24	2.6
07.31.24	6.13
08.07.24	2.3
08.14.24	4.96
08.21.24	5.05
08.28.24	2.78
09.04.24	3.88
09.11.24	2.1
09.18.24	4.91
Total	149.88

Survey Results

The responses from the Waste-to-Fuel Stakeholder Survey, which included representatives from hospitals, nonprofits, agricultural businesses, and waste management/garbage haulers, reveal a mixed but generally positive interest in waste-to-fuel projects. Half of the respondents indicated they were somewhat interested, with 25% neutral and 25% very interested in the potential of such initiatives.

When asked about their daily waste tonnage, 50% of respondents reported handling less than 1 ton of carbon-based or animal by-product waste, 25% reported 6-10 tons daily, and another 25% indicated that the question was not applicable to their operations. Waste types varied, with 50% of respondents managing municipal solid waste, while the remaining 50% were divided evenly between organic, agricultural, industrial, hazardous, and traditional waste types.

Regarding interest in further engagement, 50% of respondents expressed interest in a meeting or information session, while another 50% indicated they might attend, depending on additional details. Key concerns included transportation logistics (100%), cost of services (75%), regulatory issues (50%), and long-term viability (50%). When considering factors important for partnership, 100% of respondents emphasized cost savings as the most critical consideration, followed by environmental benefits, availability of services, proximity of the facility, and regulatory compliance, each cited by 75% of respondents.

Finally, when asked about the potential to divert waste from landfills to a waste-to-fuel facility, 75% of respondents indicated they would consider it with more information, while 25% were already in favor of this diversion. Overall, the survey highlights a cautiously optimistic interest in waste-to-fuel initiatives, with a strong focus on cost, environmental benefits, and logistical feasibility. More information and clarity on regulatory aspects will be crucial to move forward with such projects.

Based on the responses to the Green Energy Community Survey, there is a significant level of interest and concern surrounding green energy projects, particularly in relation to wind and waste-to-fuel energy. The highest level of interest was shown for waste-to-fuel and projects, with a notable proportion of respondents expressing "very interested" opinions, while wind also attracted the most opposition under the "strongly opposed" category.

When considering the benefits of green energy, respondents ranked low energy costs, and job creation and economic growth as the most important, followed by and environmental protection and energy independence. However, concerns about potential impacts on property values ranked much higher than other issues, with land use changes, such as the conversion of agricultural land, and visual impacts being the next most significant concerns, followed by cost of implementation and noise from wind turbines.

In terms of overall support for green energy projects, the survey found that 38.1% of respondents were "likely" to support such initiatives, while 23.8% were "very likely," - a total of 61.9% in support. In contrast, 14.3% were "unlikely" and 9.5% were "very unlikely," - a total of 23.8% against. When asked about the type of information or assurances needed to garner support, transparent decision-making and clear information on economic impact were overwhelmingly the top priorities, followed by environmental impact studies and health/safety assurances.

While interest in community meetings or information sessions was relatively modest, with 21.2% expressing interest, a larger group of 31.6% indicated they were not interested in such forums - 47.4% were "maybe" interested, suggesting that a majority might attend. This suggests that while there is interest in green energy, clear, frequent, and transparent communication will be essential in addressing concerns and ensuring broad community support for these initiatives.

Waste-to-Fuel Stakeholder Survey

12 Waste-to-Fuel Stakeholder surveys were distributed via mail, with follow-up phone calls made to encourage completion. However, only 4 surveys were returned, providing valuable insight into the level of engagement and willingness of local garbage haulers, industrial sites, and other stakeholders to participate in such a project. This response rate suggests potential challenges in garnering support and interest from these key groups for a Waste-to-Fuel initiative in the area.

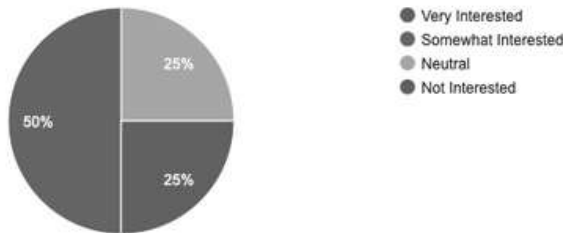
Organization Type

4 responses



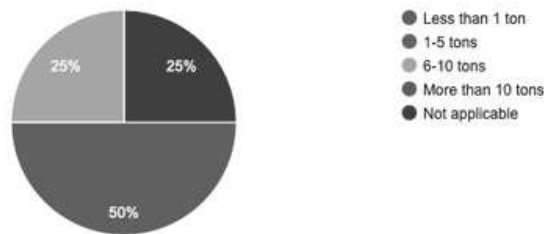
How interested is your organization in using a waste-to-fuel facility for waste management?

4 responses



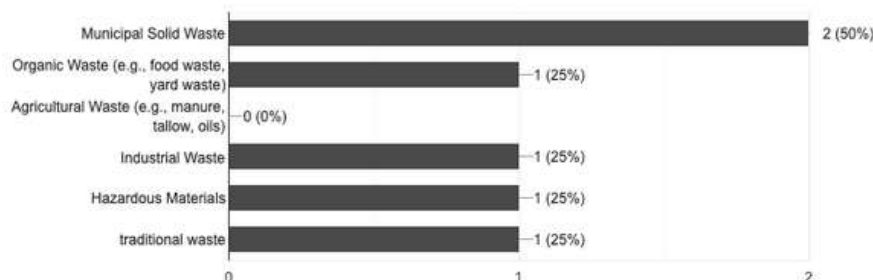
On average, how many tons of carbon-based or animal by-product waste does your organization produce or transfer daily?

4 responses



What type of waste does your organization generate? (Check all that apply)

4 responses



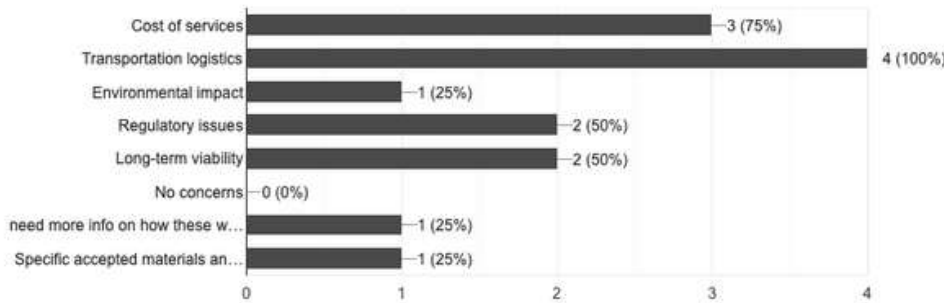
Would your organization be interested in learning more through a meeting or informational session?

4 responses



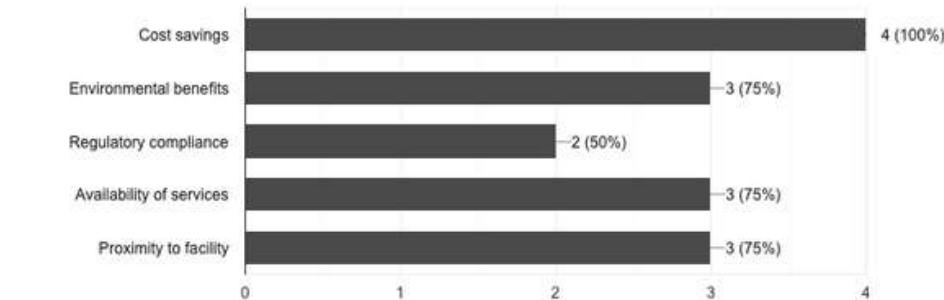
What concerns, if any, do you have about participating in a waste-to-fuel project? (Check all that apply)

4 responses



What are the most important factors influencing your decision to partner with a waste-to-fuel facility? (Check all that apply)

4 responses



Would your organization consider diverting waste from landfills to a waste-to-fuel facility?

4 responses



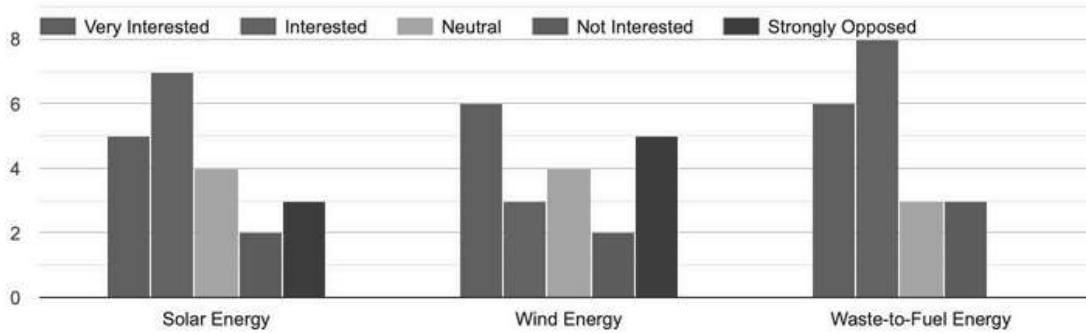
Additional comments from stakeholder:

Separation of certain materials are currently not source separated during waste collection; the 2021 IEPA Landfill Capacity Report ranks Peoria/Quad Cities 4th in the state for the most landfill capacity. Low disposal rates, recycling already in place, and efforts to maintain reasonable transportation costs may limit interest currently in a WTE alternative at this time.

Community Surveys

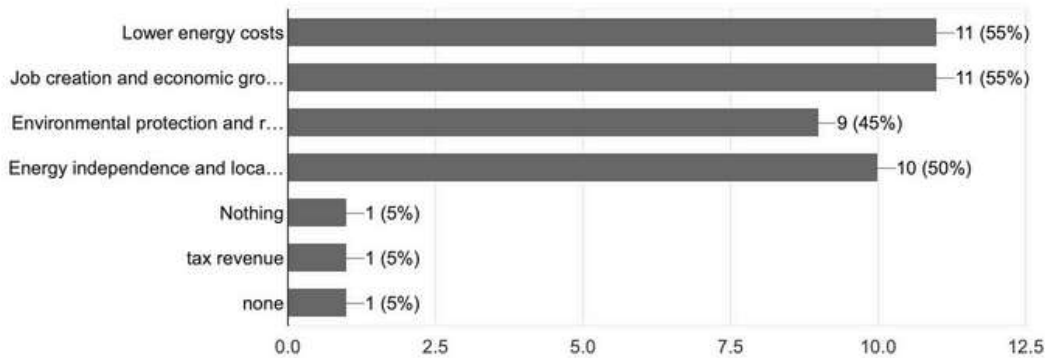
A comprehensive green energy community survey was conducted to gauge local interest and public opinion regarding the potential implementation of renewable energy projects in Mercer County. Surveys were distributed electronically and through hand delivery. A total of 21 were returned. This survey served as a critical tool to understand the attitudes of residents, landowners, business owners, and other stakeholders towards solar, wind, and waste-to-fuel initiatives. The surveys helped to identify community priorities, concerns, and the level of support for such projects.

1. What is your level of interest in the following green energy projects in our community?



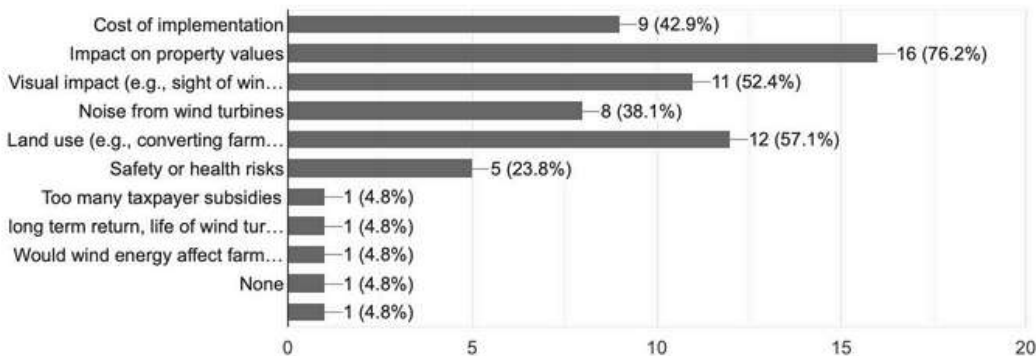
What do you believe are the biggest benefits of green energy projects in our community?

20 responses



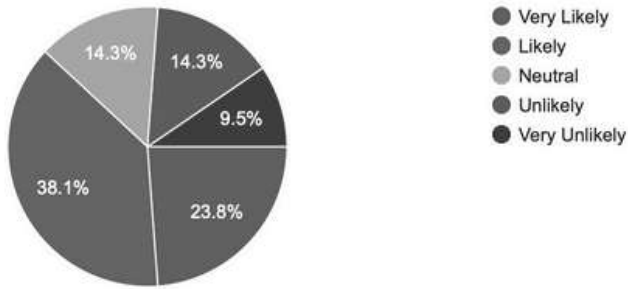
What concerns do you have regarding green energy projects?

21 responses



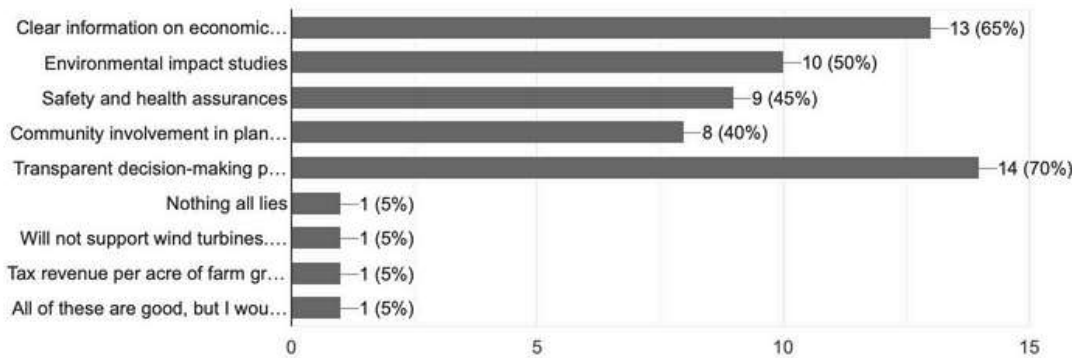
How likely would you be to support green energy projects in our community if you knew they could bring economic benefits (e.g., jobs, tax revenue) and environmental improvements?

21 responses



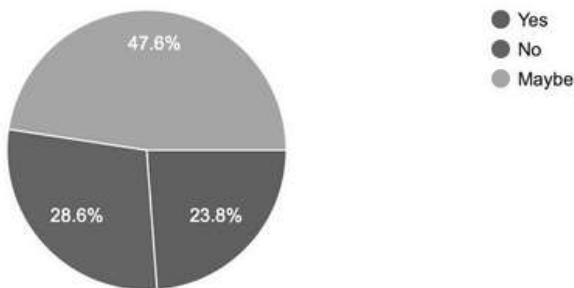
What types of information or assurances would help you feel more comfortable supporting green energy projects?

20 responses



Would you be interested in attending community meetings or information sessions about potential green energy projects?

21 responses



Please share any additional thoughts or comments you have about green energy projects in our community:

5 responses

- We have natural/unspoiled landscapes in Mercer County so just to be cautious of where solar may go.
- I would like to see hard numbers on installation and investments with and without government assistance (\$). Life of the structures, replacement costs and definitive cost saving numbers
- I am all for it, but I do know there is a lot of opposition. I think involving the community in planning and being transparent about the decision-making processes would help some of those on the fence come around.
- I would be more interested in Waste to Fuel options. I think it would have similar economic impact as wind or solar while also providing long term good paying jobs for the community.
- This is a step our community needs to sustain our energy consumption in the long term.

Case Studies & Links

Project Name	Location	Type
Arnold O. Chantland Resource Recovery Plant	Ames ,Iowa https://www.cityofames.org/government/departments-divisions-i-z/resource-recovery-system	Waste-to Energy & Recycling
Double Black Diamond Solar Project	Waverly, Illinois, Sangamon County https://swiftcurrentenergy.com/project/double-black-diamond-solar/	Solar
Knox County Wind Farm	Knox County, Illinois https://co.knox.il.us/wpcontent/uploads/2020/05/Combined_Exhibits_LandownerPP.pdf	Wind
TPI Composites	Newton, Iowa https://tpicomposites.com/	Wind Blade Manufacturing
Blattner Energy	Eastern Colorado https://www.blattnerenergy.com/projects/limon-co-wind-energy-center	Wind
Roadrunner Solar Project	Upton County, Texas https://www.enelgreenpower.com/our-projects/highlights/roadrunner-solar-project	Solar
North Star Solar	Chicago County, Minnesota https://www.communityenergyinc.com/projects/north-star-solar	Solar
Wapello Solar Facility (key case study)	Wapello, Iowa https://www.cipco.net/cleneras-wapello-solar-project-reaches-commercial-operation	Solar
University of Minnesota Solar Grazing Initiative	Morris, Minnesota https://wcroc.cfans.umn.edu/news/green-dairy	Agrivoltaics (Solar)
Twin Groves Wind Farm	Ellsworth, Illinois, McLean County https://www.edpr.com/north-america/twin-groves-wind-farm	Wind
Gipper Wind Farm	Whiteside County, Illinois https://www.scoutcleanenergy.com/projects/gipper/	Wind
Adair Wind Farm	Adair County, Iowa https://www.power-technology.com/marketdata/adair-wind-farm-us/?cf-view	Wind (Midamerican owned)
Prosperity Wind	Piatt County, Illinois(2 townships) https://www.prosperitywind.com/	Wind
Adair County Wind Project	Adair, Iowa https://www.power-technology.com/marketdata/adair-wind-farm-us/	Wind
Roeslein Alternative Energy Project & Smithfield Food	Sullivan County, Missouri https://roesleinalternativeenergy.com/	Waste-to-Fuel (natural gas)
Green Plains Renewable Energy Plant	Midwest https://gpreinc.com/where-we-are/	Corn-to-Biofuel

solar energy tax benefits, incentives, and eligibility in Illinois (2024-2025)

Federal Tax Benefits

□ Investment Tax Credit (ITC)

- **Benefit:** Deduct 30% of your solar installation costs from federal taxes.
- **Eligibility:**

System must be installed by December 31, 2032.

Applies to residential and commercial systems.

The taxpayer must own the system (leases or Power Purchase Agreements (PPAs) do not qualify).

- **Resource:** U.S. Department of Energy – [Homeowner’s Guide to the Federal Tax Credit for Solar Photovoltaics State Programs and Incentives](#)

□ Illinois Shines Program (Adjustable Block Program)

- **Benefit:** Receive payments for Renewable Energy Credits (RECs) generated by your system.
- **Eligibility:**

Projects must be located in Illinois and connected to a state utility.

Systems must be installed by a qualified installer and approved vendor.

Resource: [Illinois Shines Official Website](#)

□ Illinois Solar for All Program (if eligible)

- **Benefit:** Offers no upfront costs and immediate savings for low-income households, non-profits, and public facilities.
- **Eligibility:**

Household income must not exceed 80% of the Area Median Income (AMI) for residential applicants.

Non-profits or public facilities must be located in low-income or environmental justice communities.

- **Resource:** [Illinois Solar for All Official Website](#)

Property Tax Benefits

□ Solar Property Tax Exemption

- **Benefit:** Solar installations will not increase property tax assessments.
- **Eligibility:**

The system must meet state-defined criteria for renewable energy.

Apply through your local assessor's office.

Resource: Illinois Department of Revenue – Property Tax Exemptions

Net Metering

□ Net Metering Program

- **Benefit:** Earn credits for excess electricity generated by your system.
- **Eligibility:**

System must be located on your property and interconnected with the utility grid.

System capacity must not exceed 2 megawatts.

Contact your utility provider to confirm specific policies.

- **Resource:** Illinois Commerce Commission – Net Metering

Local Utility Incentives

□ Utility-Specific Rebates (Ameren Illinois, ComEd, etc.)

- **Benefit:** Research available rebates or grants for solar installations from your utility provider.
- **Eligibility:**

Participants must be utility customers.

Verify specific program requirements, such as system size and installer qualifications.

- **Resources:**

Ameren Illinois – Renewable Energy Programs

ComEd – Solar Programs

Home Energy Rebates (Federal – Inflation Reduction Act)

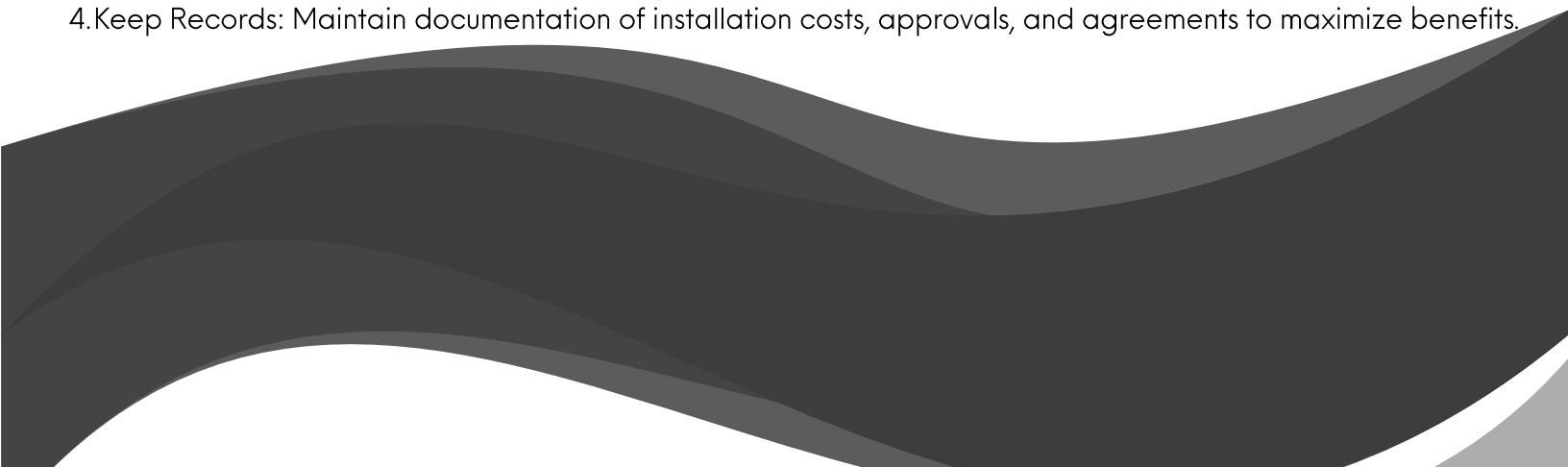
□ Home Efficiency Rebates

- **Benefit:** Claim rebates for energy efficiency upgrades in your home.
- **Resource:** U.S. Department of Energy – Home Energy Rebate Programs

□ Home Electrification Rebates

- **Benefit:** Access rebates for electrification projects, such as installing solar-compatible appliances.
- **Resource:** U.S. Department of Energy – Home Electrification Rebates

Steps to Utilize This Checklist

1. Verify Eligibility: Confirm your qualification for each program based on the criteria provided.
 2. Consult Professionals: Work with a tax advisor or solar consultant to navigate the application processes.
 3. Engage with Authorities: Contact the Illinois Power Agency, utility providers, or local government offices for current details.
 4. Keep Records: Maintain documentation of installation costs, approvals, and agreements to maximize benefits.
- 

landowner checklist for leasing to a green energy company

1. Understand the Type of Green Energy Project

- Solar: Assess if your land is suitable for solar panels (e.g., flat land, ample sunlight).
- Wind: Evaluate the wind speeds and suitability for wind turbines.
- Waste-to-Fuel: Check if your land is appropriate for waste-to-fuel or biogas production facilities.

2. Evaluate the Financial Terms of the Lease

- Lease Payment: Clarify the per-acre payment rate.
- Revenue Sharing: Ask if you will receive a share of energy revenue or bonuses.
- Upfront Payment: Check for any one-time sign-on bonuses or initial payments.
- Lease Duration: Understand the length of the lease (typically 20–30 years).
- Renewal Terms: Review renewal options after the initial lease term.
- Useful Life Clause: Understand the specifics of each company's definition and condition of useful life.

3. Understand Land Use and Restrictions

- Land Use Restrictions: Understand what activities are allowed during the lease.
- Access Roads: Confirm if new roads will be required and how they will affect the land.
- Buffer Zones: Determine if buffer zones will affect your land use.
- Decommissioning Plans: Ask about the company's plans for removing equipment and restoring the land after the lease ends.

4. Research the Green Energy Company

- Reputation: Check the company's track record and ask for references from other landowners.
- Financial Stability: Verify that the company is financially stable.
- Experience: Ensure the company has experience with successful renewable energy projects.

5. Understand Potential Risks

- Environmental Impact: Assess the potential environmental impacts on your land (e.g., soil, water, wildlife).
- Property Value: Understand how leasing to a green energy company might affect your property's future sale or value.
- Liabilities: Clarify who is responsible for accidents, damages, or environmental issues during construction and operation.
- Legal and Regulatory Risks: Be aware of any local, state, or federal regulations that could impact the project.

6. Review Permitting and Regulatory Requirements

- Zoning and Local Approvals: Confirm the project complies with local zoning laws and regulations.
- Environmental Impact Assessments (EIA): Ask if the company has conducted environmental impact assessments.
- Building Permits: Verify the company will obtain all required building and construction permits.

7. Prepare for the Construction Phase

- Construction Timeline: Request a clear timeline for construction and understand potential disruptions.
- Land Disturbance: Understand the level of disturbance to the land during construction and if there are plans for land restoration afterward.
- Maintenance Requirements: Clarify who is responsible for ongoing maintenance during the lease.

8. Consider Future Generational Impact

- Long-Term Land Stewardship: Think about how the project will affect your land in the long run, particularly after the lease ends.
- Succession Planning: Make sure the lease terms can be transferred to future generations if you plan to pass down the land.

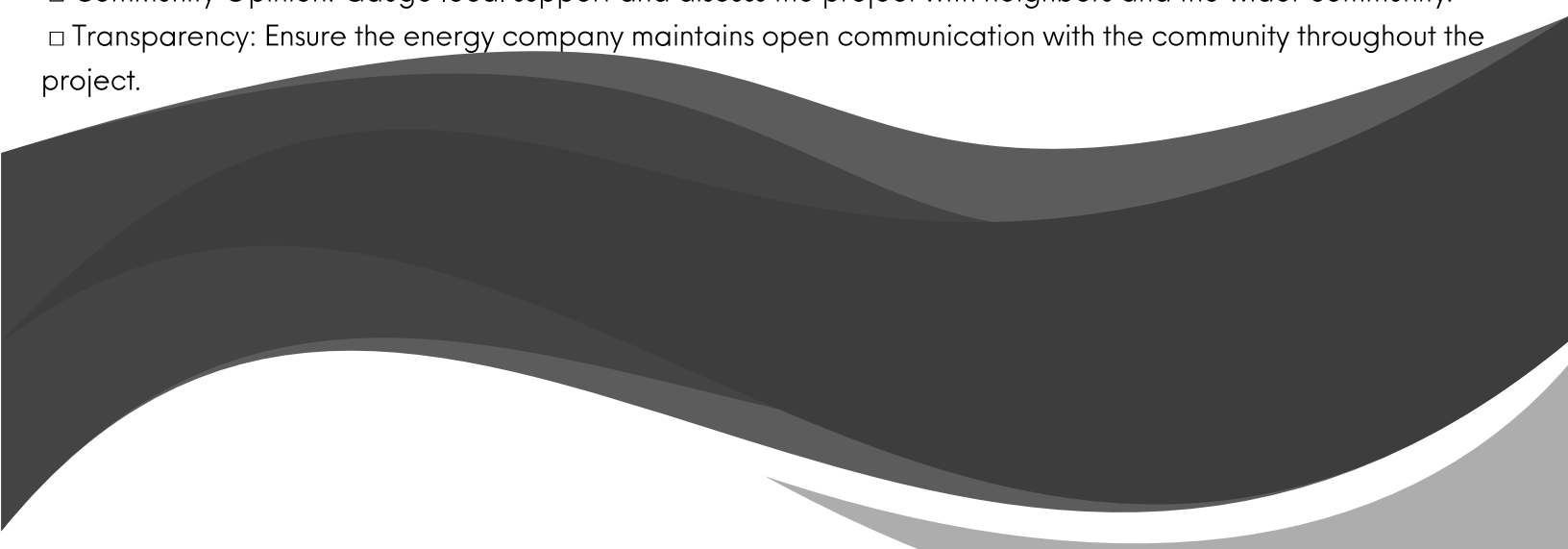
9. Negotiate Favorable Terms

- Lease Flexibility: Ensure the lease allows for adjustments if necessary due to unforeseen circumstances.
- Exit Clause: Negotiate an exit clause that allows you to terminate the lease under certain conditions, with reasonable compensation.
- Termination and Liability: Clarify the terms for early termination and equipment removal if necessary.
- Reclamation Bond: Consider a commercially available assurance that is acceptable to the county as primary beneficiary and Landowners as secondary beneficiary.

10. Seek Professional Advice

- Legal Advice: Hire an attorney to review the lease agreement.
- Tax Advice: Consult with a tax professional to understand the impact on property and income taxes.
- Insurance: Consider whether additional insurance is needed to protect your property and financial interests.

11. Engage with the Community

- Community Opinion: Gauge local support and discuss the project with neighbors and the wider community.
 - Transparency: Ensure the energy company maintains open communication with the community throughout the project.
- 

Glossary of Green Energy Terminology



A

Agricultural Land Use: The use of land for farming purposes, which may be affected by the installation of renewable energy projects like solar farms or wind turbines. Considerations for agricultural land use include potential displacement of crops, livestock, or grazing areas.

Agrivoltaics (Dual-Use Solar): The practice of using agricultural land for both farming and solar energy production, allowing crops and solar panels to coexist and benefit from shared land use.

Anaerobic Digestion: A process by which organic matter such as animal manure, food waste, or plant material is broken down by bacteria in the absence of oxygen, producing biogas (methane) and digestate, which can be used as fertilizer.

B

Biogas: A mixture of gases, primarily methane and carbon dioxide, produced from the anaerobic digestion of organic materials, which can be used as a renewable energy source.

Biodiversity Impact: The effect that green energy projects may have on local ecosystems and wildlife. For example, wind farms may affect bird migration, and solar farms may alter plant life. A biodiversity impact assessment helps mitigate these effects.

C

Carbon Footprint: The total amount of greenhouse gases emitted by a person, organization, product, or process, usually measured in units of carbon dioxide equivalents.

Community Engagement: The process of involving local residents, businesses, and other stakeholders in the planning and decision-making stages of a green energy project. This can include public meetings, surveys, and information sessions to ensure that the community's concerns and priorities are addressed.

Clean Energy Standards: Regulations or goals set by governments that require a certain percentage of energy to be produced from clean or renewable sources.

Community Solar: A solar energy project or array of panels where multiple individuals or organizations share the benefits, such as reduced electricity costs, without having panels directly on their property.

Concentrated Solar Power (CSP): A method of generating solar energy by using mirrors or lenses to concentrate sunlight onto a small area, typically to produce heat that drives a turbine.

D

Decommissioning: The process of removing and disposing of energy infrastructure once it reaches the end of its operational life. This includes the removal of solar panels, wind turbines, or waste-to-fuel facilities and restoring the land to its original state or another productive use.

Distributed Generation (DG): Small-scale power generation systems, like rooftop solar panels or small wind turbines, located close to where the electricity is used, rather than at a large, centralized power plant.

Demand Response: A strategy that encourages consumers to reduce or shift their electricity usage during peak periods in exchange for incentives, helping to balance supply and demand on the grid.

E

Energy Yield: The total amount of energy produced by a renewable energy installation, measured in kilowatt-hours (kWh) or megawatt-hours (MWh). Yield is a key factor in assessing the feasibility and profitability of renewable energy projects.

Environmental Impact Assessment (EIA): A comprehensive study conducted to assess the potential environmental, social, and economic impacts of a proposed project, aiming to inform decision-making and minimize harm.

Economic Diversification: The process of expanding and diversifying the local economy by incorporating renewable energy projects to create new income streams for landowners and businesses, reducing reliance on traditional industries like agriculture.

Ethanol: A type of biofuel made from plant materials, often used as an additive to gasoline to reduce emissions.

F

Feasibility Study: A detailed analysis conducted to determine the practicality and viability of a proposed green energy project. It considers factors such as land availability, environmental impact, economic benefit, infrastructure needs, and community support.

Financing Mechanisms: The methods by which green energy projects are funded, including loans, grants, tax credits, and public-private partnerships. These mechanisms are crucial in making renewable energy projects economically viable.

Feedstock: The raw material used to produce energy in a waste-to-fuel plant, such as agricultural waste, organic municipal waste, or animal manure.

G

Grid Integration: The process of connecting renewable energy sources like solar or wind power to the existing electrical grid. This may involve upgrading infrastructure to handle variable and distributed generation sources.

Greenhouse Gas: Gases such as carbon dioxide, methane, and nitrous oxide that trap heat in the earth's atmosphere and contribute to climate change.

I

Interconnection Costs: The expenses associated with connecting renewable energy installations (e.g., solar or wind) to the existing grid infrastructure. These costs are an important part of the feasibility analysis.

Industrial Symbiosis: The concept of connecting renewable energy projects to local industries, such as using waste-to-energy technology to process agricultural waste or providing energy to local manufacturing facilities.

Incentives & Tax Credits: Financial programs provided by governments to encourage the development of renewable energy projects. These include tax breaks, subsidies, and rebates that make green energy projects more financially feasible.

L

Land Lease Payments: The payments made to landowners for the use of their land to host renewable energy projects. This could include payments for hosting solar panels, wind turbines, or waste-to-energy facilities.

Land Use: The designation or management of land for particular purposes, such as agriculture, residential, commercial, or energy production. Renewable energy projects can affect land use by altering or repurposing agricultural or undeveloped land.

Local Energy Production: The generation of electricity from renewable sources like solar or wind within a specific geographic area, which can enhance energy independence and reduce reliance on external power sources.

M

Microgrid: A localized energy grid that can operate independently or in conjunction with the main grid. A microgrid can be particularly beneficial in rural areas like Mercer County, enhancing energy resilience and integrating renewable sources.

Maintenance Costs: The ongoing costs required to ensure that renewable energy projects continue to function efficiently over time. These costs include repairs, cleaning, and regular system checks.

N

Net Metering: A policy that allows landowners with renewable energy systems, such as solar panels, to sell excess power back to the grid, potentially reducing energy costs and generating income.

O

Operational Costs: The ongoing expenses associated with running a renewable energy project, including maintenance, personnel, equipment, and insurance. These costs are critical to evaluate in a feasibility study.

Offsetting Carbon Emissions: The process by which green energy projects reduce or eliminate carbon emissions, which helps in mitigating climate change. This can be an important consideration for local governments and stakeholders in making decisions about renewable energy investments.

P

Power Purchase Agreement (PPA): A long-term contract between the energy producer and a buyer (such as a utility or large consumer) for the sale of electricity generated by renewable sources. PPAs provide a guaranteed revenue stream for renewable energy projects.

Public-Private Partnerships (PPP): Collaborative arrangements between government agencies and private companies to finance, develop, and operate renewable energy projects. These partnerships can provide shared funding and expertise.

Photovoltaics (PV): Technology that directly converts sunlight into electricity using semiconducting materials like silicon, commonly seen in solar panels.

S

Sustainable Land Use: The use of land in a way that does not exhaust or degrade its resources, supporting both current and future generations. In renewable energy projects, sustainable land use may include practices like agrivoltaics or selecting non-prime farmland for energy generation.

Setbacks: The distance required between renewable energy infrastructure (such as solar panels or wind turbines) and nearby structures, roads, or environmentally sensitive areas. Setbacks help mitigate impacts on the local community and wildlife.

Shovel Test Pit (STP): A small, systematic excavation conducted during archaeological surveys to determine the presence of cultural materials or artifacts below the ground surface.

Solar Farm: A large-scale installation of solar panels, typically spanning multiple acres, used to generate electricity that is fed into the grid.

Solar Irradiance: The amount of solar power received on a given surface area, measured in watts per square meter (W/m^2). This factor influences solar panel efficiency.

Smart Grid: An electricity grid that uses digital technology to detect and react to local changes in usage, improving efficiency and reliability.

T

Tipping Fees: The fees paid by waste haulers to dispose of waste at waste-to-energy facilities. Tipping fees are a potential revenue source for renewable energy projects like waste-to-fuel plants.

Turbine: A device that converts kinetic energy from wind or water into mechanical energy to generate electricity.

W

Wind Energy Potential: The capacity of an area to generate energy from wind, typically measured in terms of average wind speed and turbine efficiency. This is a critical factor in determining whether wind energy is a viable option in a region like Mercer County.

Wind Turbine: A device that converts kinetic energy from wind into electrical power. Turbines are often grouped in wind farms and connected to the grid to produce electricity on a large scale.

Workforce Development: The process of training and educating local workers to take on the skilled jobs created by renewable energy projects. Workforce development is a key consideration in ensuring long-term job sustainability and economic benefits for the local community.



Sources & Works Cited

Environmental Impact and Regulations

U.S. Environmental Protection Agency (EPA). (2024). Environmental impact assessments and regulations. Retrieved from <https://www.epa.gov/environmental-impact-assessments>

Illinois Department of Natural Resources (IDNR). (2024). Mercer County environmental conservation programs. Retrieved from <https://www.idnr.illinois.gov>

Mercer County Historical Society. (2024). Archaeological history of Mercer County, Illinois. Retrieved from <https://www.mercerhistoricalsociety.org>

Renewable Energy in Rural Communities

Gumm, Angie. "Intentional Decision Making in Renewable Energy Projects for Rural Communities." *The Annals of Iowa*, vol. 71, Fall 2011, pp. 326-357.

Bake, Illinois Society of Professional Farm Managers and Rural Appraisers. (2024). Wind Energy and Farmland Values.

Baker, Illinois Society of Professional Farm Managers and Rural Appraisers. (2024). Wind Energy Payments and Landowner Agreements.

Virginia Tech CALS Global. (2024). America's Disappearing Farm and Range Land.

Carter, Jimmy. (1981). *Farmers as Environmentalists*. Iowa.

Hawkins, John. (2021). Letter to the Local Paper on Renewable Energy and Agricultural Land Use.

Koester, Nathan. (2020). Wind Farm Development in Knox County, Illinois.

Washington, U.S. Department of Agriculture. (2024). Rural Energy for America Program.

"Mercer County RISE Strategic Plan." (2024). Mercer County, Illinois.

Solar and Wind Energy Projects

SEIA. (2024). Major Solar Projects List. Solar Energy Industries Association. Retrieved from <https://www.seia.org/research-resources/major-solar-projects-list/>

SEIA. (2024). National Solar Capacity and the Expansion of Green Energy Projects. Solar Energy Industries Association. Retrieved from <https://www.seia.org>

NPR Illinois. (2024). Wind and Solar Projects in the Midwest. Retrieved from <https://www.nprillinois.org>

NPR Illinois. (2024). Impact of Wind and Solar Development on Local Communities. Retrieved from <https://www.nprillinois.org>

Energy News. (2024). Illinois Solar Market Overview. Retrieved from <https://energynews.us>

Energy News Network. (2024). Illinois Energy Projects and Their Impact on Property Values. Retrieved from <https://energynews.us>

Illinois Solar for All. (2024). Approved Projects Map. Retrieved from <https://www.illinoissfa.com>

U.S. Department of Energy. (2024). Wind Energy and Solar Capacity in the United States. Retrieved from <https://www.energy.gov/eere/wind/>

Iowa State Daily. (2024). State of Wind Energy in Iowa. Retrieved from <https://www.iowastatedaily.com>

Renewable Energy Research Institute. (2023). Wind and Solar Projects in the Midwest: A Regal Overview.

TPI Composites. (2022). Wind Energy Manufacturing in Rural America. Retrieved from: tpicomposites.com

Blattner Energy. (2024). Limon, Colorado Wind Energy Center. Retrieved from: <https://www.blattnerenergy.com/projects/limon-co-wind-energy-center>

Roadrunner Solar Project. (2024). Upton County, Texas. Retrieved from: <https://www.enelgreenpower.com/our-projects/highlights/roadrunner-solar-project>

North Star Solar. (2024). Chisago County, Minnesota. Retrieved from: <https://www.communityenergyinc.com/projects/north-star-solar>

Wapello Solar Facility. (2024). Wapello, Iowa. Retrieved from: <https://www.cipco.net/cleneras-wapello-solar-project-reaches-commercial-operation>

Twin Groves Wind Farm. (2024). Ellsworth, Illinois, McLean County. Retrieved from: <https://www.edpr.com/north-america/twin-groves-wind-farm>

Gipper Wind Farm. (2024). Whiteside County, Illinois. Retrieved from: <https://www.scoutcleanenergy.com/projects/gipper/>

Adair Wind Farm. (2024). Adair County, Iowa. Retrieved from: <https://www.power-technology.com/marketdata/adair-wind-farm-us/>

Prosperity Wind. (2024). Piatt County, Illinois. Retrieved from: <https://www.prosperitywind.com/>

Arnold O. Chantland Resource Recovery Plant. (2024). Ames, Iowa. Retrieved from: <https://www.cityofames.org/government/departments-divisions-i-z/resource-recovery-system>

Double Black Diamond Solar Project. (2024). Waverly, Illinois, Sangamon County. Retrieved from: <https://swiftcurrentenergy.com/project/double-black-diamond-solar/>

Knox County Wind Farm. (2024). Knox County, Illinois. Retrieved from: https://co.knox.il.us/wpcontent/uploads/2020/05/Combined_Exhibits_LandownerPP.pdf

Green Plains Renewable Energy Plant. (2024). Midwest Corn-to-Biofuel Facility. Retrieved from: <https://gpreinc.com/where-we-are/>

Roeslein Alternative Energy Project & Smithfield Food. (2024). Sullivan County, Missouri. Retrieved from: <https://roesleinalternativeenergy.com/>

University of Minnesota Solar Grazing Initiative. (2024). Morris, Minnesota. Retrieved from: <https://wcroc.cfans.umn.edu/news/green-dairy>

U.S. Department of Energy. (2024). U.S. Solar and Wind Project Statistics. Retrieved from: <https://www.energy.gov/eere/renewable-energy>

SEIA. (2024). Solar Installations in the United States. Retrieved from: <https://www.seia.org>

IBISWorld. (2024). Recycling Facilities in the United States. Retrieved from: <https://www.ibisworld.com/industry-statistics/number-of-businesses/recycling-facilities-united-states/>

Illinois Environmental Protection Agency (IEPA). (2024). Illinois Recycling Facilities Report. Retrieved from: <https://epa.illinois.gov>

Solar Energy Overview

U.S. Department of Energy. (2023). Solar Energy Technologies Office. Retrieved from: energy.gov/solar

National Renewable Energy Laboratory (NREL). (2023). Solar Photovoltaic (PV) Basics. Retrieved from: [nrel.gov](https://www.nrel.gov)

Wind Energy Overview

U.S. Department of Energy. (2023). Wind Energy Technologies Office. Retrieved from: energy.gov/wind

American Wind Energy Association (AWEA). (2022). Wind Energy in the United States. Retrieved from: [cleanpower.org](https://www.awea.org)

Waste-to-Fuel and Recycling

U.S. Environmental Protection Agency (EPA). (2023). Energy Recovery from Waste. Retrieved from: [epa.gov/waste](https://www.epa.gov/waste)

Renewable Energy World. (2022). Waste-to-Energy and Biogas. Retrieved from: [renewableenergyworld.com](https://www.renewableenergyworld.com)

IBISWorld. (2024). Recycling Facilities Industry in the US. Retrieved from <https://www.ibisworld.com/industry-statistics/number-of-businesses/recycling-facilities-united-states/>

Illinois Environmental Protection Agency (IEPA). (2023). Waste and Recycling Trends in Illinois. Retrieved from: [epa.illinois.gov](https://www.epa.illinois.gov)

Challenges and Community Opposition

Iowa State Daily. (2023). Ames Resource Recovery Plant: Challenges and Benefits. Retrieved from: iowastatedaily.com

Illinois Policy Institute. (2023). Piatt County Wind Project Opposition and State Overrides. Retrieved from: illinoispolicy.org

Economic and Environmental Benefits

National Renewable Energy Laboratory (NREL). (2023). Renewable Energy Benefits and Job Creation. Retrieved from: nrel.gov

U.S. Department of Energy. (2022). Benefits of Clean Energy for Rural America. Retrieved from: energy.gov/rural

Case Studies and Examples

American Clean Power Association. (2023). Rural Wind and Solar Success Stories. Retrieved from: cleanpower.org

City of Ames, Iowa. (2022). Resource Recovery Plant History and Operations. Retrieved from: cityofames.org

Roeslein, Brian. (2024). Roeslein Alternative Energy: A Biogas to Renewable Natural Gas Project. Missouri.

Newton, Iowa. (2024). TPI Composites and Arcosa Wind Blade Manufacturing. Retrieved from: <https://tpicomposites.com/>

Eastern Colorado. (2024). Utility-Scale Wind Farms and Economic Development. Retrieved from:

<https://www.blattnerenergy.com/projects/limon-co-wind-energy-center>

Roadrunner Solar Project. (2024). Texas Large-Scale Solar Development. Retrieved from:

<https://www.enelgreenpower.com/our-projects/highlights/roadrunner-solar-project>

Chisago County, Minnesota. (2024). Solar Energy Development and Cost Savings. Retrieved from:

<https://www.communityenergyinc.com/projects/north>

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