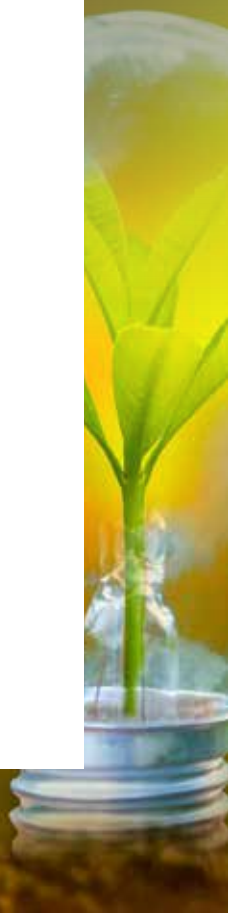
OHIO FARM BUREAU

Energy and Utility Issues Resource Guide

Members only guide to leases, easements, on-site generation and legal considerations for energy development



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This publication is a service to Ohio Farm Bureau members and should be used for informational purposes only. This publication is not intended to provide, nor should it be considered, legal advice. If you have a question regarding utility and energy issues, we hope this publication can assist you. However, this publication cannot serve as a substitute for legal advice from a competent attorney who can provide information based upon the specific facts of your situation. Laws change frequently, both in substance and interpretation. There is no guarantee regarding the accuracy or reliability of the information contained within this publication. This guide is not intended to be, nor should it be considered as, a substitution for the regulations cited.

Introduction

Next to labor, energy procurement for fuel and generation is the single largest expense for many farms. Residential consumers are looking at ways to address these energy costs, too. Ohio Farm Bureau policy focuses on helping members explore, understand and apply a variety of strategies to help them control their energy costs.

Over the last several decades, government, regulatory and industry leaders have been developing a Diversified Energy Portfolio strategy. Plans are underway to move from a centralized to a decentralized energy production and delivery network. In short – many communities and consumers who have not had the opportunity or responsibility to be involved will be encouraged to explore, adopt and accommodate new programs and technologies for farm, home and business applications. Many service providers are looking at new technologies being installed in local neighborhoods. This strategy is being implemented throughout the United States and other parts of the world.

Accordingly, Ohioans are becoming further involved in energy development. They are being asked to accommodate complex projects. These developments involve issues and decisions that are often more complex than when similar projects were first designed, installed and became operational in the early decades of the 20th century.

Getting Started

Landowners and rural residents are asked to engage and accommodate energy development that will impact their land holdings and communities. Everyone wants to get on the path to make accurate decisions. Several questions to consider include:

- What type of project is coming to the area? How large is it and who has the jurisdictional authority to approve the project? Is this project local, state or interstate (national) in scope?
- Some projects are being developed directly by public utilities, while others are being brought forward by independent energy service providers. Eminent domain provides for a right of access, all other key provisions on how land is protected, compensation for damages, ingress/egress provisions and ongoing complaint resolution procedures are always up for individual negotiation. When and under what conditions is eminent domain involved is a key consideration.
- A common question is when an agent/representative of a company contacts a landowner to review agreement provisions, when should the landowner sign on? What authority does an agent have? Do landowners have the right to address their concerns directly to the company involved?
- Other common questions relate to types of agreements, compensation, landowner protections and finding legal counsel. In short - you do not have to sign an agreement at first glance on the hood of a pickup truck.

This toolkit is designed to provide resources to help farm families ask questions, find answers and actively engage in the process.

Types of Projects

Ohioans have witnessed or will soon be involved with energy development projects in the following areas:

- **Generation:** The process of obtaining raw materials and/or transforming other forms of primary energy into a consumer fuel or electricity. These projects include, but are not limited to, coal mining, oil and gas exploration and refining, nuclear, wind, solar, biomass, fuel cell, hydo (water flow) and geothermal.
- **Transmission:** Regional and interstate systems that move bulk raw materials, refined fuels and electricity from generation sites over long distances to facilities closer to areas of demand for that energy. Transmission systems include large scale pipelines, compression stations and maintenance facilities. High voltage electric transmission lines feature larger, taller poles, towers and substation facilities which carry energy supplies over long distances.
- **Storage:** Storage of consumer fuels or capture of energy for use at a later time to reduce imbalances between energy demand and energy production. Large scale facilities could include surface fuel tanks, subsurface geologic strata and injection wells, chemical/polar accumulators, thermal, mechanical, pumped hydrology, creating alternative fuels (hydrogen production) and other technologies.
- **Distribution:** Local networks that interconnect with regional/interstate transmission systems through substation infrastructure on one side, and use "step down" facilities to interconnect and deliver fuels and power to individual home, business and/or industrial customers. These networks can be public utility owned and operated (as with all electric and many natural gas service providers in urban/suburban areas) or privately owned and operated pipeline systems accommodating other gaseous substances for select customers or natural gas services in many suburban and rural areas.

Project Sizes and Jurisdictional Authority

What are the relative sizes of projects? Who has jurisdictional authority, decision making and final approval over energy development systems? Basically, generation, transmission, storage and distribution projects, their holdings and assets are generally sized and classified in the following areas:

- **Utility Scale:** Serves and has the ability to reach numerous customers over larger regional and interstate areas at transmission and distribution systems. Typically, these are regulated at the state or federal levels.
- **Community Scale:** Serves and has the ability to reach customers on a limited level, often within the confines of a local jurisdiction or distribution system level.
- **On-Site:** Principally a generation asset, located and serving the needs and requirements for an individual property owner. Typically, these are regulated at the local level, through utility interconnection agreements and through zoning or land use regulations.

There are several government and regulatory authorities having jurisdiction over approval of design, placement and operation of energy development projects and assets. Each has its own administrative procedures in place providing opportunities for public hearings and input. Many, if not all, documents and procedures concerning applications and evaluation processes under their jurisdictional authority are a matter of public record. These include:

- **Federal Energy Regulatory Commission (FERC):** Federal agency that regulates interstate transmission of electricity, natural gas, oil, and also regulates hydropower projects and natural gas terminals.
- **North American Electric Reliability Corporation (NERC):** Not-for-profit international regulatory authority that develops and enforces Reliability Standards; annually assesses seasonal and long-term reliability; monitors the bulk power system through system awareness; and educates, trains, and certifies industry personnel.
- **PJM Interconnection LLC (PJM):** PJM is a regional transmission organization in the United States. It is part of the Eastern Interconnection grid operating an electric transmission system serving all parts of Ohio and all or part of 13 additional states. FERC regulates and approves PJM's open access transmission tariffs and management plans for the wholesale electricity market.
- **Public Utilities Commission of Ohio (PUCO):** The Public Utilities Commission of Ohio regulates electricity, natural gas, telephone, water and wastewater, motor carriers and other business and residential utilities.
- **Ohio Power Siting Board (OPSB):** The Ohio Power Siting Board is part of the PUCO that oversees energy policies and procedures that provide for the installation of energy capacity and transmission infrastructure, promotes the state's economic interests and protects the environment and land use.
- **Ohio Department of Natural Resources Division of Ohio & Gas (ODNR – Oil & Gas):** The Division is responsible for regulating Ohio's oil and natural gas industry. The Division has more than 130 inspectors, engineers, geologists, attorneys, hydrologists, surveyors, health physicists and support personnel overseeing Ohio's oil and gas industry. The Division's regulatory responsibilities include drilling, production, injection well waste management, solution mining, storage and decommissioning/restoration.
- **Public Utilities and Local Government:** Siting and management of on-site systems are detailed in an Interconnection Service Agreement between the public utility serving the area and the individual facility owner/customer. All provisions of the interconnection agreement follow PUCO guidelines and procedures. Local governments (counties, municipalities and townships exercising zoning authority) could have additional options to govern aesthetics, setbacks, safety inspection and decommissioning procedures for systems within their jurisdiction.

Other Aspects to Consider

What purpose or mission is this energy development project serving? How are eminent domain provisions applied? If a representative or field agent of the project has contacted you about the project, aspects to consider include:

- **Eminent Domain:** The power of a government to take/access private property for public use. This power can be legislatively delegated by the state to municipalities, government subdivisions or even to private persons or corporations, when they are authorized by the legislature to exercise the functions of public character. Note - Eminent domain principally applies to energy transmission, vital utility-based storage and local distribution projects that are directly public utility owned and operated and/or deemed essential for public security and need.
- **Merchant Function:** Non-utility owned and/or independent projects designed to provide energy for competitive wholesale marketplaces. Merchant function facilities sell products (raw materials, fuel or electricity), and services (transportation and storage) as commodities under a portfolio of delivery contracts to utilities, brokers,

aggregation groups, individual consumers and/or other energy service providers. Note - Eminent domain provisions do not necessarily apply to merchant function generation and storage projects.

- **Agent (Land or Field):** A person or firm contracted/engaged and paid to obtain grants for leasing and/or easement access to public or private lands and/or negotiate the agreements between two or more parties. Energy service providers have been using land agents as subcontractors to perform these services for over a century. Note – Landowners have the right to contact, voice concerns and negotiate directly with the energy service company regardless if a field representative is employed or not.

Types of Legal Agreements and Access to Counsel

Landowners are challenged to analyze, understand and execute a variety of legal agreements accommodating energy development projects in rural areas. These include:

- **Lease (Energy Related):** Contracts between individual parties that allow an entity to obtain the use of or purchase, mineral resources and/or accommodate equipment on real estate. They are similar to long-term rental agreements where the lessee uses the equipment for a period of time in return for regular payments (royalties or flat rate rental fees) as a third party (lessor).
- **Easement (Energy Related):** Any recorded or unrecorded right of way agreement between an individual landowner and energy service provider that permits the energy service provider the siting and use of an energy distribution or transmission system on, over, under or across the land of a property owner. Easements accommodating infrastructure and establishing the right of way could be for the exclusive benefit of the energy service provider or for use in connection with other services, regardless of whether the service provider owns/operates the other services or not. Easements provide for a one-time settlement payment ensuring perpetual rights of the energy service provider for access and operation of their project on the property.
- **Surface (Land) Use Agreement:** An agreement between the landowner and an operator or service provider for access/use of the landowner's property. The surface use agreement will specify what the operator or service provider can do on the landowner's holdings, where development can take place and what compensation the landowner will receive. Surface agreements are not always for gaseous sequestration or storage projects; they may be used for extraction activities as well. More specifically, the surface use agreement will address what activities go beyond "reasonable" use and may be applied when no other access rights to the surface can be determined. Subsidence issues are sometimes couched as a surface agreement issue as well.
- **Legal Counsel:** Energy-related agreements follow complex rules, regulations and procedures. Finding legal counsel well versed in this type of law is not easy. Ohio Farm Bureau provides its members referrals to legal counsel with experience representing landowners in these areas.

Welcome to Energy Development

Farm Bureau members are engaged with these issues through the organization's extensive policy development process. Discussion and outreach means coordinated efforts involving project developers, government and regulatory agencies at the township, county, state and in some cases, federal level, economic development and regional development authorities and community groups. We invite you to use this toolkit, and get involved with this process.

Oil and Gas Leasing in Ohio

Before oil and gas producers can drill, deepen, convert, plug back, plug and abandon or reopen a well, they must obtain a permit from the Division of Mineral Resources Management, Oil and Gas with the Ohio Department of Natural Resources (ODNR).

Prior to obtaining a permit, an oil and gas producer must obtain permission from the landowner(s) to enter the land. This permission is in the form of a lease agreement. Leases should always be in writing. Every effort should be made to negotiate terms of the lease agreement that are fair to both the landowner(s) and the producer. All lease agreements should be negotiated, prepared and reviewed by a qualified attorney before signing.

Following are some issues and lease terms to consider when negotiating a lease.

Understanding the Parties Involved

The lessor is the owner of the minerals to be extracted. Every person with an interest in the property needs to sign the lease. The lessee is the company interested in obtaining the rights to drill and produce the oil and gas. The lessee is not always the same company developing the site.

Working with Old Leases or Several Mineral Interests

Leasing activity and the sale of mineral rights have been conducted in Ohio for decades. Some landowners know their property is covered by an old lease signed by a previous landowner. Others have found their property covered by an old lease established beyond the scope of, or otherwise not detected by the title search conducted as they purchased the property. Holding companies possessing these old leases could sell them to interested producers today.

Some holding companies could ask to make adjustments to key provisions of an old lease. Even lease adjustments should be discussed with private counsel. A landowner should consider whether the current lease fits their needs as well.

Landowners who are unsure whether their property is encumbered by an old lease should work with the county recorder or a title examiner to determine whether the lease has been terminated or released. If there is no evidence with the county recorder of the lease's termination or release, an attorney may be able to utilize the provisions of Ohio Revised Code 5301.332 to remove the old lease from the property.

A different problem occurs when mineral rights have been severed from the property. This may occur when a person sells property but reserves the mineral rights. Provisions of the Ohio Dormant Minerals Act, Ohio Revised Code 5301.56, may be used to declare the severed mineral interests to be abandoned and rejoin the mineral interests with the surface estate under specific circumstances. A landowner should work with private counsel if they are interested in pursuing this process.

Lease Provisions are Negotiable

Unless specified by federal and state law, all lease provisions are negotiable. Leases should be written to fit the parties' specific needs. Leases and all terms should be in writing; oral promises not included in the written lease are generally unenforceable. Ensure any promises made, and any changes, additions or deletions discussed, are included in the written lease before signing. Fill all blanks legibly, with words the landowner understands.

Purpose of an Oil and Gas Lease

The lessee often wants broad language to allow access to the property without further landowner notice or permission. These "farm wide" leases can lead to multiple wells, pipelines, storage units, roads, etc. on the property. The landowner should consider the impact of these types of provisions and whether further negotiation and compensation is needed for additional infrastructure.

Points of entry and location of structures are important terms to consider as well. The language of the lease will control both now and in the future, so expansive language like "all other minerals"; or "by any means" should be carefully considered with the assistance of private counsel. Keep in mind each company may use a different lease form on which a landowner, with the help of an attorney, can make adjustments.

Size and Scope of a Lease

In the 20th century, producers tapped 40-60% of the resources available in Ohio's geologic formations. Today, these formations are being revisited and new projects accessing deeper Marcellus and Utica shale are underway. Some landowners will work with companies using smaller, traditional vertical drilling technology; others will deal with companies engaged in larger, horizontal drilling projects.

Technology and leases have changed. No matter the size or scope of the operation, simple lease agreements do not cover today's financial, logistic, environmental and liability issues. Landowners should request and expect longer, detailed leases and realize the necessity of working with an attorney.

Terms of Lease

Leases have two possible points of termination: the primary term and the secondary term. The primary term is the period of time before drilling starts. This period can last from a few months to 10 years, with two to five years being common. Landowners generally prefer a shorter primary period. A lease may identify certain activities that extend the primary term. A landowner should clearly understand both the defined primary term and any possible extensions.

The secondary term of a lease begins when a well produces in "paying quantities" and runs indefinitely while the well is active. The secondary term does not begin if the well does not produce. If a well is unsuccessful, it is common to allow the company enough time to commence a second well – the shorter the term the better. These terms should be clearly spelled out in the lease.

When the lease terminates, Ohio Revised Code 5301.09 requires the lessee to have the lease officially "released" in the records of the county recorder. If the lessee fails to do so, the landowner may follow the procedures in Ohio Revised Code 5301.332 to declare the lease forfeited.

Lease and Bonus Payments

Depending on drilling location demand, it is common for the company to pay a signing bonus. This amount varies from site to site and landowners should ask exactly what the bonus payment is intended to cover. Landowners should consider whether a bonus payment will compensate for the time and expense of attorney review, baseline environmental testing of the property's soil and water resources, hiring a financial planner and other expenses incurred during development. Bonus payments could also include an up-front per acre lease payment covering the entire primary term. Usually bonuses are one-time payments made only at the lease signing.

Lease payments are offered to the landowner in a fixed per acre amount. Lease payments can vary greatly and may be much larger than historical amounts.

Delay Rental

A delay rental is paid on a per acre basis and covers the period of time until drilling commences. It is to the landowner's benefit to have as much of the delay rental paid as early as possible. The amount of the delay rental varies greatly depending on demand for drilling locations and the potential production of the well. Delay rental payments generally mean the company has an exclusive right to drill a well.

Royalty Payments

Upon completion of a successful well, the lease agreement shifts into the secondary term. The landowner is paid a percentage of the production referred to as a royalty. A one-eighth share (12.5 percent) has been common, but given recent demand and interest, a skillful negotiator may negotiate a royalty well above that amount. A royalty should be paid on all saleable products (oil, gas, Y-2 class gas liquids, etc.) and provide production and sales records. Leases may also provide a remedy for delinquent payments.

Shut-In Wells

Given economics or logistics, there are times when a well is capable of producing, but it is not profitable to do so. In this case, a well can be "shut-in." The lease agreement should cover shut-in provisions, and speak to a shut-in payment. Shut-in payments are often the same as delay rental payments.

Free Gas

A landowner normally receives free gas, often up to 300,000 cu. ft. per year, in addition to payments. Provisions to utilize free gas are at the expense and liability of the landowner. Generally free gas use is limited to the residence where the producing well is located. The ability to use free gas for activities other than home heating can be beneficial. The lease should specify how much the landowner must pay for gas used in excess of free gas. Prices are usually indexed to the local natural gas utility rate.

Depending on well location, depth, pressure and presence of natural gas liquids, the landowner may not be able to receive free gas. In such instances, landowners can consider negotiating for ownership of an annual allotment of gas from the well to sell back to the producer. The landowner can use the proceeds to purchase appropriate fuel for home heating and other activities.

Depth of Collection Pipelines

Federal and state law regulate the installation of interstate transportation and public utility service pipelines, while different rules and individual lease agreements determine how deep oil and gas collection pipelines are buried on private property.

Ohio Department of Agriculture - Division of Soil & Water Conservation recommends pipelines be installed with at least five feet of cover. Landowners should be wary of ambiguous terms, such as "below plow depth," and instead determine depths that accommodate subsurface drainage tiles and other on-site infrastructure.

Surface Storage of Equipment and Drilling Byproducts

Landowners should carefully consider any lease terms which allow storage of oil, gas or brine from another property. Storage does not have to be a part of the original lease agreement, but rather can be a separate agreement with additional consideration paid.

Property Damage

Landowners should consider terms which require the company to pay for damages to growing crops, timber, fences, roads, water supplies, buildings and any other damage unique to the specific property. Repair or remediation for soil compaction and subsurface tile damage could also be specified for a period of several years.

Consolidation, Pooling and Utilization

Under Ohio Administrative Code 1501: 9-1-04, producers must have adequate land area above a producing well to protect the integrity of oil and gas resources. Depending on the well depth, a formula determines the area of necessary land in acres.

Leases typically contain clauses allowing a company to combine several adjoining properties as a drilling unit. The royalty from the well is then split in proportion to the number of acres each landowner contributes to the pool. The landowner with the well located on their property must incur all the nuisance, but share production royalties. Leases could provide additional payment to the landowner with the well on their property.

There are times when pooling is logical, sometimes even required by law. However it is, pooling provisions can be removed from the lease and separately negotiated. All landowners involved in a potential pool are able to negotiate regardless of the number of acres they contribute.

Company's Right to Utility Access and Water

An energy producer needs public utility access to drill and operate a well. Landowners should negotiate lease provisions indicating how and where temporary and permanent public utility infrastructure will be installed. Additional compensation is negotiable if installation causes extreme hardship.

The drilling industry in Ohio has used hydro-fraction since the late 1940s. Many companies will purchase water from nearby municipal water plants and have it stored, filtered, recycled and reused on several area drilling projects. Landowners can consider negotiation for additional compensation if their property will be used for water storage. The lease should specify the type of storage technology used (open reservoir or tank farm) and the location on the property. Carefully consider provisions allowing access to "non-domestic" sources of water (springs, ponds, and wells used to access water for livestock and/or agricultural production) on the property, which could impede the landowner's agricultural operation.

Assignments and Renewal Provisions

Unless stated otherwise, the lessee can assign the lease to another company. The landowner may want to maintain the right to deny assignment or at least the right to approval with an agreement not to withhold reasonable consent to ensure the company receiving the assignment is satisfactory.

Some leases contain automatic renewal provisions, which renew the lease for additional terms without specific consent or notice to the landowner. Landowners should be wary of these provisions because land cannot be leased to another company while the current lease is in effect. If a company leases a large tract of land and drills a successful well, the landowner can consider terms that would release portions of land not needed for the well.

Be wary of provisions allowing automatic renewal of the lease at the end of the primary term or that make it difficult for landowners to terminate the lease at the end of the primary term. Acceptance and cashing of a lease fee after the original term could automatically renew a lease depending on the terms of renewal. If the landowner receives a payment that seems unusual, such as a payment on an old lease or an old, inactive well, consult a qualified attorney before cashing or depositing the check.

Well Site Reclamation

Ohio Revised Code 1509.072 contains standards for reclamation after drilling. Reclamation of land around a project must occur within six months after drilling has commenced. The company has six months after plugging a well for land reclamation and removal of all drilling equipment. If reclamation is not completed within the allotted time frame, Ohio Revised Code 1509.32 allows for filing a complaint with ODNR Division of Mineral Resources Management. These laws set a reclamation schedule and minimum standards; however, negotiate and incorporate provisions to address specific landowner needs.

Negotiation Groups and Associations

Leases cover agreements between individual entities. Landowners joining negotiation groups and associations should determine how collective collaboration and membership adds value to the negotiation process. Landowners still need to assess their specific needs and have the ability to add their own unique provisions to a group negotiated lease.

Landowners should practice the same caution in joining a negotiation group or association as when engaging in direct negotiations with an oil and gas producer. Having individual legal counsel to represent their interests and analyze all documents is highly recommended.

Obtain References

Ask the company for five landowner references which have or previously had operating wells on their property. Call the references and ask: (1) Is the producer easy to talk to and responds to problems promptly? (2) Are delay rentals or royalties paid regularly and on time? (3) Were you consulted on the access road, well site and facility locations? (4) Was restoration done properly? (5) Are there any problems with the producer?

Finding the Right Attorney

It is critically important for landowners to secure professional advice and assistance before signing any lease. When looking for an attorney, look for one with oil and gas leasing experience. Begin by discussing the attorney's fee structure. A landowner's modest investment in attorney fees will often result in larger bonus payments, larger royalties, more favorable lease terms and more protections for the landowner and their property.

Conclusion

Landowners should recognize a lease as a partnership with the drilling company. Constant dialogue and true understanding is necessary for a successful partnership. Get everything in writing and keep the lease in a safe, but easily accessible, place. If the lease is lost, secure a copy from the county recorder's office.

Utility-Scale Wind, Solar and Telecommunications Leases

A lease concerning a large, utility-scale project is a contract between individual parties that allow an entity to obtain the use of, purchase, and/or accommodate equipment on real estate. They are similar to long-term rental agreements where the lessee (project operator or developer) uses the equipment for a period of time in return for regular payments to a third-party lessor (landowner). Utility scale leases focusing on using open rural areas involve the following technologies:

Utility-Scale Wind

Also defined as an "Economically Significant" facility in the Ohio Administrative Code 4906-1-01, a utility-scale, wind-powered electric generation facility includes wind turbines and associated facilities with a single interconnection to the interstate transmission system with a capacity of 5 megawatts or more and is considered a major electric generation facility and subject to Ohio Power Siting Board permits and procedures.

General siting factors for these projects include:

- **Infrastructure Size and Placement:** Utility-scale wind projects can encompass between five and over 100 individually sited turbines. Each turbine features monopole construction, a nacelle housing the turbine, and prop equipped with variable pitch blades to capture the wind. A single unit can be 350 feet tall or larger. The "footprint" for each turbine can range from 2-10 acres, while the entire project can involve a group of strategically placed and spaced turbines located throughout an area measured in square miles.

- **Preferred Sites:** Preferred sites are large farm fields approximately 300 acres in size to allow for installing more than one turbine, additional setbacks and to lessen wind turbulence. The area needs to be open to principally southwest prevailing winds. The site will be able to accommodate subsurface transmission line infrastructure that connects the turbine to a generation collection that eventually is developed as a centralized surface transmission line interconnected to nearby interstate transmission line via a developer-built, or public utility-maintained substation.

- **Additional Requirements:** Additional site requirements may include an open 10-acre construction and heavy maintenance area encompassing the turbine, an absence of Federal Aviation Administration height restrictions for aircraft and proximity to telecommunication outlets. Additional basic site setback requirements include an average of 750 feet from public roads, 400 feet from property lines, 1000 feet from existing buildings and 800 feet from neighboring turbines. Factors that could eliminate siting include other tall structures in the area, woodlots, wildlife habitat and wetlands.

Utility-Scale Solar

A utility-scale, solar-powered electric generation facility includes support equipment and solar panels that absorb energy from the sun. The facility includes a single interconnection to the interstate transmission system with a capacity of 50 megawatts or more and is considered a major electric generation facility and subject to Ohio Power Siting Board permits and procedures.

General siting factors for these projects include:

- **Infrastructure Size and Placement:** Utility-scale solar installations consist of surface racking systems, on-site inverter/support infrastructure and thousands of solar panels. DC electric current is gathered through a subsurface gathering line network converted to AC current which is carried by subsurface and surface high-voltage power lines to substation/interconnection infrastructure delivering generation directly into the regional/interstate transmission system.

- **Developer Preferred Sites:** Developer preferred sites are large farm fields and expansive open areas encompassing several hundred to several thousand acres. The area needs to be predominantly open to southern exposure so equipment can be exposed to and/or track the sun's daily and yearly movements and gather solar radiation. Such sites contain relatively flat areas or gradually sloping gradients. The site will be able to accommodate subsurface gathering line infrastructure that connects to a generation collection network and centralized inverter station. Inverter stations include additional networks of subsurface lines that deliver high-voltage generation to a centralized surface transmission line interconnected to nearby

interstate transmission line via a developer-built or public utility-maintained substation.

- **Additional Requirements:** Approximately 60% of a solar facility's acreage accommodates panels' racking systems, inverters and other support infrastructure. The remaining percentage is to ensure a variety of environmental and aesthetic setback requirements. Avoidance of wetlands, streams and other water bodies, drainage infrastructure, conservation practices, addressing potential inverter noise, security fencing and setback from property lines and public thoroughfares, woodlot, wildlife and vegetative management are required in site design.

Utility-Scale Telecommunications (Cellular) Tower

A type of tower and facilities used to accommodate radio, microwave, cellular phone, broadcast, signal repeater/booster or other high energy beam communications. High standing structures and designs include, but are not limited to, guy wire and free-standing support, lattice work, tripole, and monopole construction. The Federal Communications Commission regulates wireless service technologies, while local authorities use zoning provisions to maintain some jurisdiction over tower placement. The Public Utilities Commission of Ohio registers wireless service providers to operate within Ohio.

General siting factors include:

- **Infrastructure Size and Placement:** Towers can be located on the ground, or installed on buildings and other structures. Most range from, but are not limited to, 100 – 250 feet in height. One or more antennae or technology can be accommodated at the site. Telecommunications towers can be located in urban, suburban and rural settings and given the tower design, it could need less than one, and up to 20 acres to accommodate the full installation. Given current technology, one properly-placed facility can often provide service for approximately 36 square miles.

- **Preferred Sites:** Towers are usually located at geographic high points within a general service area that features a concentration of permanent and/or temporary technology users. These could include residential and commercial areas, as well as public highway systems with moderate to heavy traffic use. Setback provisions in open areas usually include at least 1320 feet from other buildings

- **Additional Requirements:** Additional site requirements may include an open 10-acre construction and heavy maintenance area encompassing the tower site and absence of Federal Aviation Administration and/or Ohio Department of Transportation Office of Aviation height restrictions and landing approaches for aircraft.

Basic Utility-Scale Lease Provisions

Developer Responsibilities

The project developer and/or service provider will own all installed equipment, maintenance facilities, security fencing, lighting and all other infrastructure installed on the property. They are responsible for maintaining facilities and remediation, vegetative management and all other practices ensuring soil and water resources on the property. Given the size and scope of local watersheds, these responsibilities could extend to neighboring and adjacent properties, too.

Landowner Responsibilities

The landowner is to be paid on a regular basis for the land occupied by the facilities. This should include payments for land used for setbacks, wetlands and woodlots within the confines of the leased project area. In many cases, land used for setbacks can still be farmed by the property owner.

Detailed Provisions

A variety of points require careful consideration of the unique characteristics, needs and requirements of the property being considered. These include:

- **No "Blanket" Agreements:** Contrary to popular belief, a "blanket" or "group" lease encompassing all landowners impacted by specific facility siting does not exist. Lease agreements must be established between each landowner and the service provider. Many landowners have the opportunity, and responsibility, to negotiate key easement provisions addressing unique needs and requirements on their property.

- **No "Free" Benefits:** While lease agreements concerning oil and gas production offer "free gas" provisions to landowners where the well is located, federal and state regulations do not permit similar provisions providing electric or telecom services. Some landowners have negotiated access to some free electric and telecom provisions, but these services have been contracted with separate on-site service companies and/or paid by the project developer.

- **Current Tenant Consideration:** If an absentee landowner leases property that is already under agricultural production by another producer/tenant, working closely with legal counsel on notifying the tenant, creating a transition plan and any necessary compensation to the tenant for any on-site, long-term land and infrastructure improvements, as well as on-gong production activities should be addressed.

- **Property Access:** The landowner should consider determining the location of and make the developer responsible for creating an access lane from the public road to the facility that can accommodate the load limits of larger maintenance vehicles, and be a minimum 16 – 20 feet wide. The lane will likely need to be accessible to the developer at all times (24 hours/day), and could be used by the landowner while performing field operations throughout the year.

- **Payment Options:** Terms for many utility-scale leases can span decades and potentially generate a six-figure income total over time; accordingly, lease payment options could be determined as a monthly payment indexed for inflation, lump sum or structured settlement. Additional fees should be assessed to compensate the landowner when the service company returns to replace equipment and/or expand services at the facility.

  Please Note: It must be understood that given intense business competition between service providers, all production costs, including rental payments could only be discussed and information shared on a confidential basis.

- **Project Decommissioning:** Lease agreements may contemplate how the facility will be removed and land returned to original condition after a project is decommissioned. While government entities can order and enforce performance bonding and periodic review of decommission planning on a regular basis, private landowners and their leases might not have this ability. Check with your legal counsel to consider how this option will be exercised on your property.

- **Agrivoltaics:** While agricultural production can be continued on setbacks for wind and telecommunication projects, researchers are now looking into farming on utility-scale solar acreage. Federal and state regulators see a utility-scale solar array as a power generation facility first and all other on-site applications second. Farmers need to consider a variety of factors (financing and risk management for the type of production activity considered, machinery, fencing, paddocks, water access, production storage, barns, caretaker residency, access lanes and internal setbacks between racking systems, labor requirements, proximity to production support services and cost-effective access and transport to viable markets) before considering agrivoltaic agreements as part of a utility-scale solar project encompassing the acreages detailed above.

- **Good Neighbor Agreements:** To help address a variety of facility setback and aesthetic issues, adjoining landowners could have the ability to determine management plans along their property boundary and receive on-going rental fees or other compensation through "good neighbor" agreements with the developer. As with all legal agreements referenced in this toolkit, access to legal counsel and careful analysis of term conditions is recommended.

- **Provisions Needing Additional Attention:** Along with the considerations detailed above, agreements concerning all types of utility-scale projects can consider addressing who pays tax obligations beyond CAUV, insurance, indemnity, decommission bonding, security, setbacks, crop damages, repair of surface and subsurface farm infrastructure (field tile, culverts, ditches, streambanks and crossings and surface conservation practices), soil compaction, noxious weed eradication, fencing, supply lines, aesthetics and conflict resolution procedures. All provisions must be detailed in writing in the lease agreement prior to signing and filing at the county recorder's office.

- **Monitor Construction and Repair:** Landowners should continually inspect the site before, during and after construction, repair and remediation are deemed complete. If the governing agency requires inspection and compliance reports, they can continue to monitor their websites for permits and filings; many reports are a matter of public record. Landowners who wish to directly access the project site should consider the terms of their lease and all safety precautions as determined by the developer.

Properly crafted leases and related regulatory compliance could last forever - landowners need to continue to identify and express their concerns. They need to document, photograph and note communications with company representatives, follow provisions as detailed in leases, use the respective government agency's conflict resolution process for action and consult legal counsel for further assistance.

Pipeline, Electric, Telecommunication and Private Line Easements

An energy, utility or service right-of-way easement is any recorded or unrecorded right-of-way agreement between an individual landowner and a service provider. It permits the service provider the siting and use of facilities that are part of a distribution or transmission system on, over, under or across the land of a property owner. These systems could be public interstate, local distribution utility or non-public service provider lines. Easements accommodating infrastructure and establishing the right-of-way across property could be for the exclusive benefit of the service provider or for use in connection with another project, regardless of whether the service provider owns/operates the project or not.

An easement contract conveys the right of access to use real property of another without possessing it. All other provisions concerning the project detailed in the agreement (points of ingress/egress, protection of soil and water resources, subsurface drainage, conservation practices, crop damage, setbacks, conflict resolution, financial compensation, etc.) are still highly negotiable. Ownership of land remains with the landowner.

Pipelines, electric lines or telecommunication lines detailed in the easement could be new installations or upgrades to previously existing infrastructure. Some service providers describe an agreement as temporary access for personnel, equipment and materials to perform new construction or upgrading previously installed facilities. It needs to be understood that while the activity will be completed within a period of time, most easements are considered perpetual. Many easement agreements grant the service provider key right-of-way access and possibly future development rights permanently. Regardless of what is said, the language of the easement will control if disputes arise in the future. It is always best practice to engage private legal counsel to review any easement agreement.

Getting Started

Basic questions that need to be addressed during initial conversations between the landowner and service provider's representative includes:

- **Who is the agent?** An agent/representative of the company is often assigned or subcontracted to communicate with landowners to review agreement provisions. What direct authority does this person have? Does a landowner have the right to address concerns directly to the company involved? While many companies have hired land and field agents to engage in these activities, landowners have the right to engage their own legal counsel to interpret/negotiate easement provisions, as well as discuss their concerns directly with the company.

- **What type of project is coming to the area?** What is the width of the right-of-way or easement being considered? Does the work span or connect to multi-state networks, making it an interstate project? Does it connect to or support local utility distribution assets, making it a utility-scale project, or is it for private use serving specific customers of a service company?

- **What is the project "transporting" or "delivering?"** If it is a pipeline, what gaseous or liquid material is involved? What is the distance, pressure and diameter of the pipe being constructed? Is the line part of an oil and gas drilling project? If it is an electric line, what is the charge being handled in kilovolts, distance, pole height or tower size, and interconnection points being serviced? Is it a telecommunications or local land-line phone service owned/operated by the utility? Is it a private line or project? Regardless of infrastructure involved, who are the ultimate customers being served?

- **Who has governance and power siting jurisdiction?** Most interstate projects come under jurisdiction of the Federal Energy Regulatory Commission. Public utility distribution siting comes under the jurisdiction of the Ohio Power Siting Board. Oil and gas gathering lines are governed by the Ohio Department of Natural Resources Division of Oil & Gas Resource Management. Land-line phone services are under jurisdiction of the Public Utilities Commission of Ohio. Private lines could come under local government zoning provisions, local courts or have little jurisdictional monitoring. Moreover, other state and federal agencies have jurisdiction over general construction projects. For instance, could rainwater runoff trigger the need for US EPA National Pollutant Discharge Elimination System permitting?

- **Adjudicatory process applies?** Power siting case work involving many federal and state regulatory agencies adheres to a legal, administrative process where rule of law is used to review evidence and apply legal reasoning to determine the rights and obligations between parties involved. Many of the government agencies listed above use administrative law judges and/or attorney examiners to rule on preliminary motions, conduct pre-hearing conferences, issue subpoenas, conduct hearings (which may include written and/or oral testimony and cross-examination), review briefs and prepare and issue decisions. Such permitting case work is assigned an official agency Docket Number and ensures that many, if not all, documents can be referenced as a matter of public record.

- **Is eminent domain applicable for this project?** Eminent domain provides for a right of access, for certain types of transmission and utility distribution infrastructure. Landowners should request specific written information and guidelines showing how and when eminent domain provisions apply to the specific project. All other key provisions on how an individual landowner's assets are protected, compensation for damages, ingress/egress provisions and on-going complaint resolution procedures are always up for individual negotiation in any type of easement agreement. If a project has the right to use eminent domain and an agreement cannot be reached, a court action is likely to determine the right of eminent domain, necessity and, if applicable, appropriate compensation.

Special Easement Considerations Need to be Addressed

Contrary to popular belief, a "blanket" or "group" easement encompassing all landowners impacted by a specific right-of-way does not exist. Easement agreements must be established between each impacted landowner and the service provider. Many landowners have the opportunity, and responsibility, to negotiate key easement provisions addressing unique needs and requirements on their property.

Many easement agreements focus solely on a settlement offer, providing a one-time, lump-sum payment to obtain permanent right-of-way access rights across property. Landowners have the right, and responsibility, to negotiate key provisions to assess additional compensation payments to address impacts of facility maintenance and other land access activities on a perpetual basis.

Construction activities generate potential soil and water impacts that can last for years or even decades. Landowners need to think how repair and remediation needs to be accomplished on the property to ensure land conditions can return to their original condition. Many should consult professional conservation consultants and land improvement/conservation contractors to create remediation strategies. These strategies can be considered for incorporation into the easement agreement. Costs for these services, along with legal fees to craft final language, can also be considered for negotiation as part of the settlement offer.

Basic considerations include:

- **Identify the property involved:** Easements can have "blanket" language that allows for access or use of all property with very little or no limitations. Similarly, nonspecific language that allows for a right of way or use "somewhere" on the property may not provide certainty for the landowner. Language identifying where the right of way is located by survey markers or GPS references can provide the best information for the landowner or any future landowners. Maps can be attached to the easement to show right-of-way location and special features of the land that should be protected. Access road width and size of the construction site or service lane can also be specified.

- **Identify additional agreements on the property:** Are there any other long-term leases or easements, and/or oil and gas agreements attached to the property? Are there any USDA Conservation Reserve Program (CRP) or Conservation Reserve Enhancement Program (CREP) easement obligations?

- **Width and depth provisions:** If the infrastructure is to be buried, federal or state regulations could set minimum standards; a landowner can also consider whether deeper depths might be preferable for their land use. The depth of tile lines and other underground infrastructure should also be considered, and what accommodations might be needed for that infrastructure. Historically the term, "below plow depth" has been used, however, specific measurements can provide more clarity. Case in point – agriculture professionals generally recommend a basic 36-48 inch space below the fertile "A" horizon of topsoil and a minimum of 18 inches between a service or pipeline and subsurface farm infrastructure. The same professionals recommend installation of anti-compaction pads to surface infrastructure construction sites and all access lanes, too.

- **Additional infrastructure:** Does the easement allow for the placement of just the project or facility at hand, or does it allow for other infrastructure to be installed now or at a later date? Does it allow for subleasing to other entities with similar land use needs? Does the easement speak to any other infrastructure, such as compressor stations, substations, metering equipment, or other support infrastructure?

- **Landowner Right-of-Way use:** While many easements and government regulations limit or prohibit certain surface activities and agricultural practices on right-of-ways, landowners still need to understand their rights to use easement areas for accepted agricultural use (crop production, pasture, etc.). Driveways, parking areas, access lanes, limited fencing, land forming and landscaping could be negotiated. Consider long-term potential uses and how they might be referenced or permitted in the agreement.

- **Crop disturbance or loss:** Will construction disturb or destroy growing crops - including timber? How will the value of those crops be determined for compensation? If there is crop loss or damage in the future due to maintenance or repair activities, will the landowner be compensated? How will that compensation be determined?

- **Service provider accommodations:** Some issues and concerns need to be addressed in context of a perpetual basis. Address how, when and what advance notification requirements service company personnel will use to access the property for inspection and routine maintenance. Identify planting, harvesting and animal husbandry situations when it is not recommended for a company to enter an area. Payment/compensation for damages to property, crops and impacted livestock, as well as trees, fences, buildings, tile lines and drainage ditches, springs, water wells for homestead and other use should be detailed in the agreement. Moreover, all subsurface infrastructure should be marked at all right-of-way and fencerow/access lane/road intersections using Ohio Utility Protection Service protocols.

Other Issues to Monitor – Keep a Notebook

Design and permitting for service infrastructure projects can take months, even years. Regulatory decisions and technical plan adjustments often impact right-of-ways several times during the process. Landowners need to keep track of key developments. It is recommended that landowners create personal records or notebooks to keep track of developments impacting their property.

Collect all correspondence, and information, dates and times land agents and/or preliminary environmental evaluation survey crews want access to the property. In many cases, state and federal laws permit preliminary environmental survey crews limited line of sight survey access across potentially impacted land holdings. Landowners should inquire if they or their representatives could accompany survey crews going across their property.

Many land and survey agents are required to keep detailed field notes of their activities; landowners can, too. Other notebook materials could include:

- **Meetings, hearings and document filings:** Landowners need to make plans to attend any developer or government agency-sponsored scoping meetings, open house meetings and public hearings. Moreover, if project development is governed by a state or federal agency, obtain the project's case docket number and visit the agency's website and docket information system. Some docketing systems will allow for a landowner to establish a subscription to be notified of, and have public access to, additional permit filings, public comments and case proceedings.

  While attending a local information meeting, make personal contacts and establish relationships with project and regulatory agency personnel. Obtain information on repair/remediation procedures and policies, environmental impact statements (EIS), ag mitigation statements (AIS), regulatory agency Opinion & Order and other information.

- **Visit websites:** Project developers often provide a website with downloadable information on the specific project. Government agencies provide detailed information on rules, regulations, hearings schedules, public comment submission and details on ag mitigation procedures.

- **Land condition inventory:** Walk across the right-of-way and adjoining property to photograph and/or document surface conditions. Gather pre-construction data on subsurface soil conditions, hydrology, crop production figures, access road conditions, culverts, subsurface and surface drainage infrastructure. List consultants, contractors, surveyors and others who can provide special assessments for the property.

- **Research information needed for negotiations:** Landowners need to determine potential construction impacts, repair, and remediation requirements for their property. Landowners can consider employing a consultant, a professional land improvement contractor, or ask their local SWCD for assistance. Identify soil types, topography, water bodies, potential effects of compaction and erosion and other issues relating to their land holdings. This information can be incorporated into a mitigation plan or work order to be incorporated into your unique easement agreement.

- **Monitor construction and repair:** Landowners can clarify what access they will have to the property throughout construction and after installation of infrastructure is finished. They can work with the service provider's general contractor to ensure they know and follow all on-site safety procedures, as well as take photographs, too. If the governing agency requires inspection and compliance reports, landowners can continue to monitor their websites for case filings as many reports are public records. Landowners should continually inspect the site before, during and after construction, repair and remediation are completed.

Properly crafted easements and regulatory compliance last forever – landowners need to continue their land condition inventory, identify concerns and document it in their notebook. They need to document, photograph and note communications with company representatives, follow provisions as detailed in easement agreements, use the respective government agency's conflict resolution process for action and consult legal counsel for further assistance.

Energy Choice and Aggregation Programs in Ohio

For over 100 years in Ohio, your energy services — electric and natural gas — and rates have been regulated by the Public Utilities Commission of Ohio. Under this regulation, a single company served you. Since choosing a supplier to provide your electric generation and/or natural gas fuel supplies was not an option, the rates a company charged were set by the PUCO. The resulting rates allowed the utility to recover its expenses, plus an agreed-upon margin of profit for their investment. The PUCO's job remains to balance the interests of the utility with the interests of its customers.

Many Ohioans served directly by a major electric or natural gas investor-owned utility have the ability to choose their energy generation and/or natural gas fuel supplier. This option has been available for many since the 1990s. Ohio regulators continue to monitor market programs and conditions to ensure that aggregation and customer choice programs remain competitive, provide consumer protections and allow eligible farm, residential and commercial customers to use the programs available to control their energy costs.

What is Energy Choice in Ohio?

Just as you shop for other products and services, you may also be able to shop for an energy supplier. With choice, energy customers from large manufacturers to residential homeowners are able to shop for electric and natural gas supply options from a diverse group of competitive suppliers certified by the PUCO. As more suppliers offer their services in your area, you have the opportunity to choose a company that supplies the generation of your electricity and production of your natural gas.

Choosing an electric generation supplier and/or natural gas fuel provider is an individual consumer option. While rules and regulations are in place concerning customer choice marketing and service contract provisions, energy supply is considered a "deregulated" service. It is not covered in the same way as other mandatory services encompassing utility service. While you can pick a generation or fuel supplier, all system maintenance and use of utility-scale transportation and distribution networks still remain under direct ownership of the incumbent public utility. Rates, tariffs and customer service charges to use this infrastructure are still regulated by the PUCO. Because of this relationship, your local utility will still provide reliable infrastructure-related services and your customer relationship with the utility will not change.

Consequently, if you choose a new energy supplier, your local utility will continue to deliver the electricity and natural gas to your home or business. Your local utility will also continue to maintain and repair the respective poles, wires and pipes. You should continue to call your local utility if your power or gas goes out. The PUCO will still oversee the safety and reliability of your services.

Please note: Customer choice programs are operational with all of Ohio's major investor-owned utilities under direct PUCO jurisdiction. (AEP - Ohio, FirstEnergy, AES, Duke, Columbia Gas of Ohio - NiSource and Enbridge). Other smaller public utilities, municipal electric companies and member-owned rural electric cooperatives have the ability to "opt-in" to offering customer choice programs. Check with your respective utility service provider for more information.

The Ability to Use Choice

The ability to choose an electric or natural gas supplier gives consumers a greater variety of pricing plans and allows consumers more freedom to determine their best option. Program participation not only gives you the freedom to work with a supplier and take advantage of unique product offerings, but also the peace of mind that you will still receive the same high level of service from your local utility.

A choice that affects a financial commitment like your electric and natural gas bill shouldn't be left to chance. Just like you would shop around to get the best deal on your car insurance, you should also research the different products available from electric or natural gas suppliers. While the PUCO cannot guarantee that your bills will decrease if you participate, the PUCO's "apples to apples" chart makes it quick and easy to compare a variety of suppliers based on what is important to you.

Points to Consider When Researching Choice or Aggregation Group Membership

Besides participating in Choice as an individual customer, consumers could exercise the option of joining a membership or aggregation group. Issues to consider include:

Advantages:

- Program sponsors can negotiate directly with a service provider on your behalf for convenient and secure electric and natural gas supplies as a member of a larger consumer group. The larger the group's aggregate energy usage, the better bargaining position a sponsor may have for supplies and rates.
- By virtue of its size, the group sponsors can negotiate directly with a service provider to access a variety of supply sources and pipeline systems to find the most cost-efficient gas and transportation rates.
- Group administrators and leadership can monitor the open energy commodity markets for additional savings opportunities to be passed along to members. They can utilize their knowledge/experience about the industry to constantly evaluate and improve energy provider services for members.
- A membership group can act as a third-party arbitrator and provide resources for customer/service provider conflict resolution.
- A membership group offers information and education programs for its members concerning other aspects of utility deregulation, energy conservation and other related topics.
- Individual members are part of an organized group. The group members have a more effective voice representing their interests and needs in legislative, regulatory and consumer arenas.
- Tapping into additional resources and benefits by virtue of its size and organization, a membership group can potentially negotiate for additional member benefits such as appliance purchasing discounts, on-site generation facilities and farm/home/business energy audits. The group could tap into other programs concerning other utility areas, too.

Issues for Concern:

- **Overall membership cost:** Push your pencil; the cost of some group memberships could outweigh the energy savings benefits. Usually, the larger the user, the better the savings. Smaller farm, home and business users should look into membership in organizations and programs where participation in an energy aggregation or service group is included within a "family" or "package" of other money-saving benefits.
- Smaller consumers belonging to energy programs coupled with other benefits could more easily maximize their buying power than belonging to stand-alone energy groups.
- **Membership composition:** Make sure you are not an outlier participant in an energy group. Each energy user has different needs. Each need translates into a specific buying strategy. Farm, residential and industrial customers have different, and sometimes opposing, energy needs. The more homogeneous the mixture, the more effective the group. If all group members have similar energy usage patterns, the more effectively and efficiently a buying strategy can be used to address these specific needs.
- **Define terms carefully:** Briefly defined, an energy program should consist of a group of similar users joining together to aggregate their needs for energy and services; program administrators should be able to negotiate with reputable service providers. In the group buying or aggregation process, individual members pool their buying power together and multiply the effectiveness of their bargaining position. The result of the negotiation process is a program of services and benefits for the entire group membership that no one individual can achieve alone.
- Some organizations provide "endorsed" programs and "buyers alliances." Consumers considering these offerings should inquire about specific benefits defining their relationship with the program's energy service provider.
- Does the program sponsor provide additional member education, billing audit, energy market monitoring or conflict resolution services?

Key Questions When Considering Energy Supply Providers and Contracts:

- **PUCO Certification:** Is the service provider a Certified Retail Energy Service (CRES) Provider with the Public Utilities Commission of Ohio? Are its supply contracts and marketing practices certified and monitored under CRES certification?

- **Community or Government Aggregation Program Membership:** Do I already have automatic membership in a community or government aggregation program by virtue of my farm, home or business being located within the jurisdiction of a county, township or municipality sponsoring such a project? What are the community/government program's official opt-in and opt-out provisions? Does this project offer prices and fees comparable to membership or open market programs?

- **Initial Contract Term & Renewal Provisions:** How long is the agreement? What are the specific terms for contract renewal; is renewal automatic on my anniversary date, and will the rate be fixed or variable? What financial penalties are assessed if I cancel before the contract expires?

- **Utility Bill Notifications:** How will program charges appear on my bill? Will direct contact information identifying my service provider be available if I contact them specifically with my questions/concerns?

Notes

On-Site Generation and Interconnection

Over the past several years, farmers have been looking at technologies, programs and services that can help them control their energy costs. These include looking at services that could become available through their local utility and other service providers as a result of digital metering technology. As a result, many farmers are looking at incorporating an aggressive demand-side management and energy efficiency (DSM/EE) strategy. Software applications; new lighting technology; heating, ventilation and air conditioning (HVAC) upgrades; insulation and sealing in farm buildings are all part of this approach.

Investing in an on-site energy generation system is part of this strategy, too. On-site systems attributes include:

Purpose and Generation Capacity

On-site systems are installed to provide power for direct use where they are located. In many cases, they are designed to provide 90% to 120% of a location's specific electric generation requirements over a 12-month period. Excess generation and/or requirements for additional power can be fed into and out of a local distribution system through a net metering and interconnection agreement with the incumbent electric utility.

Scale

Systems can vary in size, from small residential models to bigger systems that accommodate larger farm, commercial and/or industrial load requirements. Depending on system size, day-to-day operation and required maintenance can be addressed by the system owner, contracts with qualified service providers and/or full-time on-site employees.

Ownership, Leasing and Operation Responsibility

On-site systems are installed directly at the location that requires the generation. They could be owned or leased but are always primarily operated by the entity or individual responsible for the property where they are installed.

Design Parameters

Contrary to popular belief, there is no such thing as an "off the rack," on-site generation system. A qualified energy service provider needs to look at a variety of technical requirements concerning the location and tailor-make, design, install, and ensure system functions meet a variety of operational and safety parameters.

Siting and Governance

Most rules, regulations, policies and procedures concerning design requirements and interconnection of the on-site system into the utility distribution circuit are addressed through a required Interconnection Agreement with the incumbent utility. All technical and safety parameters are incorporated into the agreement. In many cases, specific language incorporated by the utility is part of its interconnection tariff approved by the Public Utility Commission of Ohio. County, municipal and/or township governments having zoning authority could incorporate other requirements (aesthetics, setbacks, noise, heights and additional construction inspection, decommissioning and removal, as well as safety parameters) as part of this process. Based on the technology employed, some on-site systems could be required to register their existence with the PUCO.

Advances in this type of technology and equipment have made incorporating on-site generation systems more practical than just five years ago. Advances with this technology are expected to continue.

Types of on-site generation technologies farmers should research for home and farm use include:

Solar

Installations can encompass individual rooftops to small amounts of acreage. Such installations consist of tens to several hundred solar panels that absorb energy from the sun to generate an electric current. Solar panels used for these applications need to pass the US EPA Toxicity Characteristic Leaching Procedure. This test and chemical analysis process is used to determine whether there are hazardous elements present in waste. The test involves a simulation of leaching that can provide a rating to prove if any waste generated by construction, use or decommission of system components is dangerous to the environment or not. Solar panels used in utility, community and on-site projects must pass TCLP analysis prior to their use. Depending on its size, ground installed systems could need to incorporate geotechnical engineering (geotechnics), the branch of civil engineering concerned with the engineering behavior of earth materials. It uses the principles of soil mechanics and rock mechanics to solve engineering problems.

Wind

Installations can encompass one or several units to provide on-site power requirements. The rotating parts of a wind turbine (the blades and the hub) are referred to as the rotor. The rotor diameter is incorporated into the design of the system and will determine the approximate generational capacity of the system when coupled with available wind speed data. Another important factor is the tower. Type of construction (monopole or lattice work), height, strength and stability are key to its design and installation. Depending on its size, some systems could need to incorporate geotechnics to address specific soil and rock conditions to address engineering problems.

Generator Set (Genset)

An electric generator and engine combination that provides power used to run on-site equipment and facilities. The engine runs on fuel and drives the generator, which in turn provides electricity to run the facility. Systems could rely on natural gas (methane or biogas), propane or liquid fuels to feed the system. While many farmers employ gensets to provide emergency and/or reserve generation in case of utility power outages, genset applications for continual on-site use will need to consider long-term reliability and robust operational requirements. Emissions and fuel storage are other factors to address. Regardless of type of engine and fuel employed, these systems require adequate ventilation, fuel tanks and/or access to pipelines no matter where they are operated.

Steps to Consider Prior to Investing in On-Site Generation

Farm, small business and residential energy consumers looking to invest in on-site technology need to have the same frame of mind they would when purchasing a major piece of farm equipment or real estate.

Steps and factors to consider include:

Performing an Energy Audit

It is estimated that only one out of every three persons interested in installing an on-site generation system have the energy usage factors that warrant one. The best strategy when designing and installing an on-site system is to determine your facility's energy load profile – in other words, gathering specific data on how you use power at your location. Energy audits for the farm or business should consider:

- **Qualified on-site installers and service provider assistance:** Many qualified on-site generation installers and service providers have access to these resources. Some farms are large enough to consider the American Society of Heating, Refrigeration & Air Conditioning Engineers Benchmark Level 1-3 Audit Programs for Mercantile and Commercial Properties. Some utilities and local governments offer similar services for small facility and home use through Community Action Agencies and home weatherization programs.

- **Facility size and design factors:** Look at grain storage, handling and conditioning equipment, as well as livestock facilities and their lighting, HVAC, sensor controls, refrigeration, water & feed supply, compressor, pump and motor use. This data includes all power draw and utility bill analysis. Being able to compare/contrast your load profile with other similar facilities in the area is an added benefit.

- **Document audit results/identify additional conservation measures:** Create or have the service provider deliver a detailed report on all existing conditions and identify all additional energy conservation measures that could be used at your location prior to investing in and installing an on-site system. The report should identify all proposed additional energy conservation measures, their estimated implementation costs, estimated savings factors, return on investment payback and life cycle savings.

- **Create and share a detailed design report:** Along with providing detailed services for an energy audit, a qualified service provider and installer should be able to create a final design report. This report should provide all details on the equipment used, equipment location, wiring and design schematics, as well as utility-approved metering, interconnection and safety switches. Entities you might want to share design requirements and provide additional input include:

- **Incumbent public utility:** Consult all utility representatives required to ensure your utility interconnect agreement is complete. Filing for interconnection could trigger a utility rate review with additional or different rates, tariffs and fees on your utility bill. Make sure you understand and discuss how your utility bill could change once on-site generation is activated.

- **Insurance carrier:** While many farm and homeowner policies cover on-site generation facilities, it is important to discover how your rate and risk management strategies could change.

- **Fire protection:** If there is an emergency at the location, does everyone involved in the situation know where the safety switch is located? While not mandatory in most cases, it could be worthwhile to share this information with the local fire department and EMS.

- **Local government:** Are there zoning ordinances in place governing this type of installation?

REC Credit Markets and Terms

Many state and federal agencies allow those investing in on-site generation facilities using renewable energy resources to generate Renewable Energy Credits (RECs). These credits are a transferable legal instrument signifying commodity value. REC credits include creation of certificates, credits, allowances, green tags or other tradable instruments signifying monetary value. Trading and market conditions are regulated by government authorities.

While not a major contributing factor to determine if you should invest in an on-site system or not, some parties target system owners with special incentives and discounts that are actually commodity purchase agreements obligating on-site system owners to transfer or surrender their REC credits to other parties long-term. Other agreements could assess non-delivery penalties if and when the on-site system is down for maintenance and/or decommissioned.

On-site system owners have the ability to monitor many REC credits and terms through access to the PJM Generation Attribute Tracking System (GATS). It provides services for markets in nine states. Many programs monitored accept credits generated by systems located in other states within the PJM network. Moreover, certified REC aggregators and brokers available for further consultation and assistance.

Notes

Adopting and Applying Fuel and EV Technologies

Farming and agribusiness operations require extensive use of machinery; to maintain an operation, a variety of vehicle applications are required. Heavy-duty trucks and farm equipment are needed to address on-road transport and off-road field applications. Pickup trucks and utility vehicles are needed for maintenance activities and/or getting to points on the operation easily or quickly. All of these need to be able to travel across various types of terrain efficiently. Similar considerations need to be addressed when purchasing lightweight trucks and cars for personal use.

In short, technology impacts every aspect of agricultural machinery and equipment. In the future, what types of fuel will farmers employ to perform specific functions on and off the farm? Issues to consider include:

Types of Fuel

All fuel types have a few traits in common: they are forms of potential energy (stored), are used to create mechanical energy (movement) as well as kinetic energy (operations, lifting, etc.). The energy produced needs to accommodate the size and shape of the storage container in the vehicle. Fuel types include:

- Refined/Petroleum-Based Liquids: traditional gasoline and diesel fuel.
- Renewable Liquids: ethanol, butanol, methanol, biodiesel and hydrogen.
- Gaseous: methane, propane, biogas and fuel gas.
- Other technologies: electric vehicle (EV).

Fuel Handling Considerations: Properties to consider when choosing a fuel include:

- **Energy density:** Energy density is the amount of energy released by a given mass or volume of fuel. It can be measured in gravimetric energy density (per unit of mass) or volumetric energy density (per unit of volume). Gravimetric energy density is relevant when comparing the energy efficiency of fuels.
- **Calorific value:** The energy content per unit of mass of the fuel; the heat energy and/or capacity released to do work while completely burning a known fuel.
- **Flash point and fire point:** The minimum temperature at which a liquid gives off sufficient concentrated vapor to form an ignitable mixture in air. The lower the flash point, the easier it is to ignite and create a fire point or sustained burn.
- **Cloud point:** The temperature at which wax/paraffin compounds begin to separate when the fuel is chilled to a low temperature.
- **Pour point:** The lowest temperature at which a fuel is capable of flowing under gravity. When the temperature is less than the pour point, the fuel cannot be stored or transferred through a pipeline or fuel line.
- **Viscosity:** Measurement of a fluid's resistance to flow. The lower the viscosity, the easier a fluid flows and less friction is generated while it is in motion.
- **Sulphur content:** After combustion, sulfur in fuel creates corrosive wear on engine parts and generates particulate matter that needs to be addressed in air quality and emission standards.
- **Water/Sediment content:** Water and sediment contents of fuel can cause equipment corrosion and processing issues. Determining water and sediment content is required to measure accurately net volumes of actual fuel in sales, taxation, exchanges, and custody transfers.
- **Specific Heat/Expansion coefficient:** The change in size per volume of fuel stored at a constant pressure relative to change in temperature.

Individuals have the right to choose and/or advocate for the availability of technologies and fuels that fits their needs and requirements. Issues to consider when investing in a vehicle could include:

- **Engine:** A machine that runs on a combustible fuel as a form of potential energy and creates mechanical force and motion.
- **Motor:** Any power unit that generates motion. Electric motors are considered "prime movers" converting electrical energy into mechanical force and motion
- **Maintenance:** A set of technical practices and procedures that ensure continuous and efficient operation. Engine and motor maintenance require monitoring and potential parts replacements on a regular basis. Short-term and long-term costs vary for each type of unit and need to be considered, compared and contrasted.
- **Curb and gross vehicle weight:** Curb weight is the total weight of a vehicle including standard equipment, required fluids, such as motor oil, transmission oil, coolant, AC refrigerant and fuel storage at full capacity. Gross vehicle weight is curb weight, plus passengers and cargo. Weight will need to be considered when determining operational/fuel efficiency, driving surfaces and compaction (on roads and farm fields) and other mandatory, involuntary or voluntary operational conditions.
- **Torque:** A measurement of a vehicle's ability to do work. The more torque, the greater amount of power an engine or motor can produce. More torque translates to better acceleration, load handling, equipment pulling, lifting and other job-related applications.
- **Range:** Reference of miles to empty and/or the maximum distance a vehicle can travel given current GVW and full fuel capacity. Vehicle operators will need to consider the number and location of refueling and charging stations available over the course they will be taking in a road trip or field production activities.
- **Fueling/Charging capabilities:** Consideration for on-site fuel storage facilities, charging stations, portability to remote locations, fuel and/or battery weight, and effort/time required to return vehicle to active use. Moreover, this considers the overall cost for fuel and on-site infrastructure over time.
- **Vehicle storage:** Often identified as a garage, carport, storage building or shop. These structures need to be large enough to accommodate short and long-term storage capabilities, accommodate tools and safe fueling/recharging infrastructure, protection from weather and security.

Given service requirements for farm, agribusiness, construction and industrial applications, farmers, contractors and other consumers using these fuels have a leadership position providing insight on requirements for heavy-duty on and off-road vehicles. Other types of consumer fuels – gaseous or fuel gas applications as well as electric vehicle (EV) motor, charging and battery applications are becoming available. Farmers are already joining other consumers to identify specific purchasing, maintenance, transportation range, work and personal vehicle requirements to see if, how and when these technologies can help them most effectively control farm management and energy costs.

Geothermal Energy Development

Geothermal energy is a form of heat energy taken from resources in the Earth's crust. The heat can be volcanic, caused by pressure in deep tectonic/geologic plates or be contained in subsurface areas with a set, ambient temperature regardless of season.

Power Generation Being Explored

Resources used to generate thermal and electric energy involve water and/or other binary fluids. Types of utility scale or major on-site geothermal power plants include:

- **Dry steam:** Employs water and hydrothermal fluids that are already natural steam. The steam is drawn directly into a turbine which drives a generator. As the liquid condenses it is reinjected into the subterranean reservoir where it originated.

- **Flash steam:** High temperature heated fluids are pumped into a low-pressure chamber deep underground. The abrupt change in pressure encountered when the liquid enters the chamber causes it to rapidly change or "flash" into steam, which drives a turbine.

- **Binary cycle:** Binary-cycle plants use lower temperature geothermal reservoir fluids. One fluid at a high temperature passes through a heat exchanger with a secondary or "binary" fluid. The binary fluid has a lower boiling point and the heat from the geothermal fluid causes it to flash to vapor. The vapor is used to drive a turbine.

While Ohio doesn't have volcanic or tectonic assets, its geologic resources are being explored for potential binary cycle operations.

Heating and Cooling Applications

A geothermal heat pump uses constant underground temperatures as thermal storage that enables heating and cooling. Temperatures at about 30 feet below the surface remain relatively constant year-round; usually about 55°F. For most areas in the United States, this means soil temperatures are usually warmer than the air in winter and cooler than the air in summer. GHP technology has the potential to use constant underground temperatures to efficiently exchange above ground temperatures; heating buildings in the winter and cooling them in the summer.

Systems can vary in the type of collector and connections used. A basic GHP system features:

- **Underground heat collectors:** A GHP uses the Earth as a heat source or passive heat exchanger (thermal storage), using a series of connected pipes buried in the ground near a building. The underground loop can be buried vertically or horizontally. It circulates a fluid that absorbs or deposits heat to the surrounding soil, depending on whether the ambient (outside) air is colder or warmer than the soil.

- **Heat pumps:** When ambient temperatures are colder than the ground, a GHP removes heat from the collector's fluids, concentrates it and transfers it to the building. When ambient temperatures are warmer than the ground, the heat pump removes heat from the building and deposits it underground.

- **Distribution subsystems:** Conventional ductwork is generally used to distribute heated or cooled air from the geothermal heat pump throughout the building.

Simply stated - Heat pumps move heat from one place to another. Air conditioners and refrigeration systems are two common examples of heat pumps.

Utility-Scale Issues to Consider

Energy developers are looking at potential GHP applications that go beyond individual building heating and cooling requirements. Larger installations include campuses, industrial parks and neighborhoods. Design specifications, operational requirements and service models are developing faster than legal guidance and governance. Issues to consider before accommodating a project include:

- **System size and design requirements:** Most, if not all geothermal and GHP applications need water; where will it be coming from? How will water use for the system impact use on the farm or in the home? Where, what dimensions and how deep will an injection well be installed? The pipeline exchanger will be located subsurface; what are the physical dimensions of the system, how will construction impact soils, subsurface and surface drainage systems? How will my (and neighboring) farm assets be treated and protected?

- **Legal agreements and permitting:** GHP wells, pipelines, water access, electric line rights-of-way and support facility placement need to be considered. Leases, easements and surface agreements defining relationships between a landowner and developer come into play. If the system serves more than one landowner or consumer, is this considered a public utility? Who has permitting and governance responsibility - local, state and/or federal authority?

On-Site Applications

Currently, there are over 50,000 GHP systems providing heating, ventilation and air conditioning requirements to individual homes and businesses throughout Ohio. Issues to consider when looking into on-site GHP technology include:

- **Operation of current HVAC system(s):** The current HVAC system(s) will determine what type of replacement GHP makes sense. Consumers need to consider heating and cooling requirements. What type of furnace and fuel is used for this function? What type of air conditioning system is used in the summer? Can one GHP system easily replace both systems?

- **Aesthetics:** How much noise is the system going to make? Where will it be accommodated along the perimeter of the building? Where will the injection well and pipeline heat exchange system be installed? Will its location impact on-site water and waste management systems? How will a vegetative management and landscaping plan "mask" the infrastructure, but ensure that plant roots and driveway traffic don't impact the system?

- **Weather extremes:** GHPs are designed to address cold winters and hot summers. However, an individual unit's efficiency could drop in extreme conditions. What works great in one region of the country, might have issues in another area. Identify a system that works in Ohio.

- **Additional upgrades:** Adding a new, major electrical appliance can trigger an electric service upgrade. This could mean coordinating plans with the utility to expand load requirements (and rates) for the farm, home or business. Have the GHP provider ensure that design and installation of the system incorporates needed upgrades to the location's electric service to handle the GHP.

- **Grants and tax benefits:** Like other utility-scale and on-site applications, grants and tax incentives for GHP and home electrification improvements may be available. However, a system only makes sense if economic, technical, aesthetic and related return-on-investment factors are promising, regardless of applying any grants, government incentives and/or manufacturing discounts.

As with other technologies, Farm Bureau members need to investigate a variety of issues and options to ensure investment in geothermal technology provides effective opportunities to help them control their energy costs.

Biomass Facilities and Energy Production

Biomass is organic material derived from living organisms. Most biomass contains stored chemical energy that was produced by plants through photosynthesis and animals through consumption of plants, creation and growth of bodily organs and tissues, as well as respiration and digestion (muscular and bone matter, fats, wastes and manures).

Many types of plant biomass have historically been burned directly for heat. These materials fueled almost all energy consumption from ancient times through the mid-1800s. Currently, the feedstock provides approximately 5% of our energy requirements. Biomass resources are used for on-site heating and cooking, electric generation, as well as creation of liquid and gaseous transportation fuels. Common biomass resources include:

- **Agriculture:** Crops and waste materials from corn, soybeans, sugar cane, switchgrass, woody plants, manure and algae.
- **Wood:** Firewood, pellets, chips, sawdust and black liquor from pulp and paper mills.
- **Food processing:** Plant residues, tissues, fats and oils.
- **Biogenics:** Materials including paper, cotton, wool, food, yard and wood wastes, as well as municipal sewage sludge.

Basic Digester Technology

Feedstocks undergo biodegradation under anaerobic conditions and in the presence of methanogenic bacteria. The result of the digestion process is production of methane-rich biogas and biologically inert biosolids. Basic digester technologies feature feedstock storage units (lagoons and tanks) and reactor chambers (surface and subsurface vessels, storage tanks and related mediums/cells/filters) where varying degrees of control (temperature, feedstock mix and bacterial culture concentration/placement) are performed. System types include:

- **Passive:** The most common passive system is a covered lagoon where materials are expected to be stored for eventual use or disposal. Breakdown of substances in the lagoon produces methane-rich biogas, which is collected and stored using a plastic cover (storage cell). Biogas is considered a secondary byproduct of this system.
- **Low Rate:** Controlled mixing and material flow provides a steady, balanced stream of materials going in and out of the system. The flow rate ensures that microorganisms feed on the materials. The biomethane produced is considered a primary, major product of this system.
- **High Rate:** Controlled mixing and material flow practices are increased and special filters and media are used to ensure specific microorganisms live and target feedstocks flowing through the system. As with low rate systems, the biomethane produced is considered a primary, major product of this process.

Operational Issues to Consider

There are a number of benefits to operating a biomass digester as part of an on-site manure and nutrient management system. These include creating fertilizers for crop production, soil health and conservation, protection of water resources, odor control and creation of gaseous fuels for electric generation, heating and transportation. These benefits need to be balanced with the following considerations:

Diversified operation planning

While manure and other biomass resources have been used on the farm as a fertilizer, additional products can be produced, creating new income opportunities. In many areas of Ohio, farmers are being approached by off-farm biomass feedstock and energy developers to create partnerships where larger, on-site facilities can be installed. On-site biomass feedstocks produced in the farming operation provide base feedstocks. Contracted partners and service providers supply off-farm biomass feedstocks from producers throughout the local area, region or state. Tipping fees, selling processed materials as organic nutrients, animal bedding, peat moss replacement, plant trays and other products are possible. Creating, refining and transporting biogas (biofuel) via pipeline or commercial carrier are part of the operation, too.

Another point to consider – For every ton of solid and/or liquid feedstock going into a system, biogas and an approximate ton of biologically inert materials are produced. Materials management is crucial. Farmers and their partners will need to create business plans to store and transport biogas and related byproducts, as well as identify new manufacturing and market outlets to address these management challenges.

Legal Agreements

Associated legal documents governing relationships between the landowner and other business partners could incorporate lease, easement and/or surface agreement provisions. A farmer and business partner(s) should consider addressing issues like who provides insurance, indemnification, facility maintenance, decommissioning and associated bonding, security, setbacks, aesthetics and conflict resolution procedures.

Repair and preservation of surface and subsurface farm infrastructure due to construction and soil compaction is another important consideration. Subsurface field tile, culverts, ditches, surface conservation practices, streambanks and crossings need to be identified. Noxious weed control, fencing, utility interconnection and electric load requirements, pipeline and storage facility installations should be considered for discussions as well.

Government and Regulatory Considerations

Generally recognized farming practices are exempt from many aspects of local government and regulatory authority. However, some practices associated with large-scale digester operations often go beyond farming. Landowners and developers will need to work with local governments and regulators to address zoning and community planning provisions, applicable business operation, health, safety and aesthetic requirements. Traffic control and road use maintenance agreements (RUMAs), as well as determining how taxes and CAUV provisions apply to the operation need to be addressed.

Employee and service provider training

Large facilities come with complex operational requirements. Regardless of the facility size and design, owners need to provide specialized employee instruction and collaborative training exercises for local first responders. Persons responsible for day-to-day operations should be able to identify and prevent risks leading to fires and explosions, leaks and pathogen exposure. Everyone involved with the site needs to know about specialized machinery operations and confined work space entry situations that could lead to asphyxiation and gas poisoning.

Neighbor relations

While many system operators focus on diversified farm income, employment, economic growth and sustainable production practices, other questions need to be answered, such as: How does the facility adhere to land use planning, enhance recycling and energy production, provide long-term community resources, address conflicts and enhance good neighbor relations? These considerations need to be incorporated into development plans early and not as an afterthought.

Energy Governance and Engagement Opportunities

Energy development projects require community and individual landowner engagement. The information below lists key government agencies involved in energy planning and development at national, state and local levels, as well as provides some basic first steps in getting involved in the process.

Federal and Interstate

Federal Energy Regulatory Commission

The federal agency that regulates interstate transmission of electricity, natural gas and oil; and also regulates hydropower projects and natural gas terminals. FERC's Office of Public Participation promotes and supports public voices in FERC case proceedings. OPP can support efforts to understand the industries FERC regulates and the limits of FERC jurisdiction. OPP conducts outreach to communities and organizations that have traditionally been under-represented or are new to FERC processes. OPP staff attends local public meetings, visits with community organizations and delivers presentations around the country to encourage more participation in and understanding of FERC matters.

PJM Interconnection LLC

PJM is a regional transmission organization in the United States. It is part of the Eastern Interconnection grid operating an electric transmission system serving all parts of Ohio and all or part of 13 additional states. As a regional transmission organization, PJM coordinates, controls and monitors multi-state electric grid operations, as well as enforces FERC rules and case proceedings on open access transmission tariffs and management plans for the wholesale electricity market.

State of Ohio

Public Utilities Commission of Ohio

The Public Utilities Commission of Ohio regulates electricity, natural gas, telephone, water and wastewater,and other business and residential utilities. Its consumer programs ensure a fair market that provides competitive choices and prices. PUCO is composed of five members appointed to rotating, five-year terms by the governor. Terms typically begin in April. One seat on PUCO becomes available each year and any Ohioan who is not employed by a public utility and does not have a financial interest in a public utility can apply for an open seat. The governor's selection is made from a list of names submitted by the PUCO nominating council. After considering the resumes of all applicants, the nominating council narrows the list to those most qualified for the position. The nominating council interviews these applicants and recommends a list of four finalists to the governor for consideration. The governor has 30 days to either appoint a commissioner from the list or request a new list of four names from the nominating council. The governor's appointment is subject to confirmation by the Ohio Senate. PUCO responsibilities and jurisdiction are detailed in Section 4901.02 of the Ohio Revised Code.

Ohio Power Siting Board

The Ohio Power Siting Board, originally known as the Ohio Power Siting Commission, was formally created in 1972. The authority of the board is outlined in Chapter 4906 of the Ohio Revised Code. The OPSB supports energy policies and procedures that provide for the installation of energy capacity and transmission infrastructure, promotes the state's economic interests and protects the environment and land use. The board is normally composed of 11 members, seven who vote and four who are non-voting members. The members include:

- Chairman of the Public Utilities Commission who serves as Chairman of the Board
- Director of the Environmental Protection Agency
- Director of the Department of Agriculture
- Director of the Department of Development
- Director of the Department of Health
- Director of the Department of Natural Resources
- A public member who must be an engineer, is appointed by the governor from a list of nominees provided by the Ohio Consumers' Counsel.
- Four non-voting members are legislators; two from the Ohio House of Representatives and two from the Ohio Senate.
- Under SB 52 provisions, special ad hoc voting members may be appointed to represent county and township governments where a specific wind or solar project is being considered in proceedings.

The OPSB has its own technical staff and draws additional staff support from the member agencies' staff and coordinates its work with other state and federal agencies with a stake in siting activities.

Ohio Department of Natural Resources Division of Ohio & Gas
The division is responsible for regulating Ohio's oil and natural gas industry, including facility placement, on-site operation, inspection, decommissioning and environmental protection. The division has more than 130 inspectors, engineers, geologists, attorneys, hydrologists, surveyors, health physicists and support personnel overseeing Ohio's oil and gas industry. The division's regulatory responsibilities include:

- Oil and gas drilling operations.
- Oil and gas production operations.
- Underground injection operations.
- Oil and gas waste recycling, treatment, storage, processing and disposal operations.
- Staff who inspect the drilling, plugging and restoration of all oil and gas wells in the state.
- Solution mining.
- Gas storage operations.
- Staff who issue permits and inspect the construction of horizontal well sites to ensure the safe drilling of wells.
- Staff who inspect the drilling, restoration and plugging of all oil and gas wells in the state.

Regional and Local

Regional Planning Commission
A government entity established and organized under Section 713.21 of the Ohio Revised Code. Planning commissions involve local government and community stakeholder collaboration where members formulate plans and policies for the most effective and balanced utilization of resources. Members define the stages, on the basis of priority; recommend how strategies/plans should be carried out; and propose the allocation of resources for the due completion of each step of a development process.

Zoning
A method of planning in which a tier of local government divides land into areas called zones, each of which has a set of regulations for new development that differs from other zones. Zones may be defined for a single use (e.g. residential, industrial). They may combine several activities by use, or in the case of form-based zoning, the differing regulations may govern the density, size and shape of allowed buildings whatever their use. Zoning may specify a variety of outright and conditional uses of land. It may indicate the size and dimensions of lots that land may be subdivided into, or the form and scale of buildings. These guidelines are set in order to guide growth and development. Specific zoning authority for counties can be found in Section 303 of the Ohio Revised Code and for Townships in Section 519 of the Ohio Revised Code. Zoning is an optional, not mandatory, provision of planning and governance for counties, townships, municipalities and other governments by statute.

Utilities – Public and Private

Investor-owned utility
A for-profit, stockholder/corporate owned electric utility that supplies at least retail electric distribution service. Companies in this category are under direct PUCO jurisdiction.

Electric cooperative
A not-for-profit electric light company that both is or has been financed in whole or in part under the Rural Electrification Act of 1936, 49 Stat. 1363, 7 U.S.C. 901, and owns or operates facilities in this state to generate, transmit, or distribute electricity, or a not-for-profit successor of such company.

Municipal
Municipal utilities generally operate as a division of the local city government and provide electricity and/or natural gas supply services in the same way that many cities provide water, sewer and other utility services.

Private service group: Natural gas distribution services sponsored by a non-utility service provider. In some areas of rural Ohio, service providers have access to local natural gas resources and offer contracted services, transportation pipeline access and local distribution infrastructure placement to serve adjacent homes, farms and businesses. Private service groups are not regulated by the PUCO; accordingly, contracts between the provider and individual customer set service obligations and responsibilities.

Associated Facilities Covered in Energy and Utility Development

Gas pipelines
Rights-of-way, land, structures, mains, valves, meters, compressors, regulators, tanks, overpressure protection equipment and other transportation items and equipment used for the transportation of gas from and/or to a gas pipeline or service outlet.

Electric power transmission lines
Where poles or towers support both transmission and distribution conductors, the poles, towers, anchors, guys and rights-of-way are considered as associated facilities of the transmission line, while the conductors, crossarms, braces, grounds, tie wires, insulators, etc., shall be considered as associated facilities of transmission lines or distribution lines according to the purposes for which they are used.

Electric current voltage must be reduced or "stepped down" to lower levels as it serves different parts of transmission and distribution networks. Transmission voltage switching substations owned and operated by a transmission service provider that change transmission line voltage from one amount to another, as well as transmission voltage switching substations that change line voltage amounts between a transmission line and an interconnected distribution utility are classified as transmission substations and are considered associated facilities of transmission lines. Those stations that change electricity from transmission voltage to distribution voltage and are owned and operated by the local distribution utility are classified as distribution substations, and are not considered associated facilities of transmission lines.

In many cases, rights-of-way, land, permanent access roads, structures, breakers, switches, transformers, and other transmission items and equipment used for the transmission of electricity at voltages of one hundred kilovolts or greater in Ohio are under direct Ohio Power Siting Board jurisdiction and are considered as associated facilities of transmission lines.

Power generation facilities

Rights-of-way, land, permanent access roads, structures, tanks, distribution lines and substations necessary to interconnect the facility to the electric grid, water lines, pollution control equipment and other equipment used for the generation of electricity.

Public Participation in Power Siting and Energy Development

Residents living in and around a proposed project area of a pending power siting project are often interested in receiving information about the case and participating in the power siting process. There are a variety of ways to stay informed and providing input including:

Attending public informational and/or scoping meetings

As part of the power siting process, government agencies and/or the developer filing the application are required to hold public informational meetings. The purpose of these programs is for the governing agency and/or company representatives to inform stakeholders about local plans to file an application at the federal, state or local level. The meeting also serves as an opportunity to gather input and hear the public's concerns, which the government agency and company should consider in developing an application or engagement in permit proceedings.

Submitting comments

Interested persons are encouraged to submit informal written comments to the governing agency. In order to be filed in the public comments section of the case record, submissions must include the case number. These comments inform the agency's staff and leadership during its investigation, but do not carry the same weight as the sworn testimony presented at the local public hearing.

Testifying at local public hearing

Once the company submits its application, the appropriate governing agency staff scrutinizes the plan and makes a formal request for comments from other agencies and parties. Formal public hearings are held as part of this process. At this hearing, hosted by the governing agency, members of the public provide sworn testimony that becomes part of the case record. Written statements may also be submitted.

Formal intervention in case proceedings

Intervention grants individuals, organizations and governments the right to participate as a party of record in the case proceedings. Interveners are served with all documents in the case, participate in the adjudicatory hearing process and may file for rehearing or appeal of a regulatory board decision.

Determining Public Benefits in Power Siting and Energy Development

Power siting of facilities need to ensure that benefits, access to fuels, energy and services are available to all members of society. These are goods that do not become scarce when people use them. Major types of public benefits that are considered as part of power siting case work include:

Convenience

Fairness and non-exclusivity for all consumers to address a need and/or receive a service from an entity or operation.

Security

Members of a given community typically pay taxes to their law enforcement agencies. In return, they expect to be able to live safely and peacefully in their homes and communities.

Education and information access

Governments often provide educational services to help their citizens become productive members of society. Public knowledge, such as scientific developments or contemporary history, also occurs as a public good. This is because public knowledge is not usually easy to develop access restrictions for and is not a finite or diminishing resource. Sharing public knowledge can also often help people contribute more to their society.

Environment

Depending on the exact environmental resource, one person's usage of that element of the environment may not affect its availability for someone else. Additionally, it can be challenging to restrict human access to resources that are already naturally present in a given space, like biodiversity or the ozone layer.

Infrastructure

Government provides for unrestricted access to its region's infrastructure such as roads, water, sewage and energy systems. How much an individual uses these types of infrastructure resources or systems rarely affects the access or usage for other people or groups. Citizens pay tax rates or fees on infrastructure for their community, region or nation with the expectation that the government ensures that these systems are maintained in good condition.

Public health

Governments provide public health measures to all people in their community, region or nation. Governments often invest in initiatives to limit or contain the spread of infectious diseases among their populations. Like education, public health measures can help a society produce more productive members and improve the overall health of the community.

Additional Public Input in Power Siting and Energy Development

Farmers and rural residents that could be directly impacted by placement of power siting have the ability to provide additional input on facility operations and have complaints addressed. These include:

Complaint Resolution Plan and process

Created as part of many power siting procedures for individual facilities under federal and state jurisdiction, an applicant needs to file a Complaint Resolution Plan on the project's public docket. Plan provisions should include:

- **Public notice:** Notify via mail affected property owners and tenants including those residences located within one mile of the project area, county commissioners, township trustees, emergency responders, airports, schools and libraries, as well as anyone who has requested updates regarding the project. These notices shall provide information about the project, including contact information and a copy of the complaint resolution plan.

- **Start of construction:** A start of construction notice shall include written confirmation that the applicant has complied with all pre construction-related conditions of the permit, as well as a timeline for construction and restoration activities.

- **Start of facility operations:** The start of facility operations notice shall include written confirmation that the applicant has complied with all construction-related conditions of the certificate, as well as, a timeline for the start of operations. The applicant shall file a copy of these notices on the public docket.

- **Complaint summary reports:** During the construction and operation of the facility, the applicant shall submit to the governing regulatory agency quarterly complaint summary reports. The report shall include a list of all complaints received through the applicant's complaint resolution process, a description of the actions taken toward the resolution of each complaint and a status update if the complaint has yet to be resolved. The reports shall be filed on the public docket. It is important that landowners, tenants and residents identify and report their concerns using this complaint resolution process and have them recorded on the public docket to ensure inspection and corrective action.

- **Drainage Protection Process:** Created as part of the power siting process under federal and state jurisdiction. A project applicant shall ensure that the construction site and nearby parcels are protected from unwanted surface and subsurface drainage problems due to construction and operation of the project. The applicant shall ensure this by:

- **Documenting drainage conditions:** The applicant needs to document benchmark conditions of surface and subsurface drainage systems prior to construction, including the location of laterals, mains, grassed waterways and county maintenance/repair ditches. The applicants should consult with the owner of the parcel containing the construction site, owners of all adjacent property, the county soil and water conservation district and local government to request drainage system information over those parcels. This process should include consulting with the county engineer for tile located in a county maintenance/repair ditch.

- **Drainage system repair and remediation:** The applicant should be held responsible to locate, avoid and/or replace all field tile drainage systems at their expense. This should include performing prompt repair as required to compensate parcel owners in agricultural areas affected by damage to crops or other agricultural activities caused by damage to functioning field tile drainage systems and soils resulting from the construction, operation and/or maintenance of the facility.

- **Local Government Notice:** When repairing tiles in a county maintenance/repair ditch, the applicant shall give reasonable notice of such repairs to the county engineer. The county engineer, or his/her representative, shall have the right to visually inspect and approve repair work prior to backfill.

- **File a Complaint:** When landowners, tenants and adjoining neighbors are impacted by damages to drainage infrastructure, surface and/or subsurface, it is important to report their concerns using the project's approved complaint resolution process and have them recorded on the public docket to ensure inspection and corrective action.

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