Evaluation of the Capacity to Deploy Solar & Wind Technologies in Ohio's 9th Congressional District

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September 30, 2011

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This Report was Prepared by Green Energy Ohio

Green Energy Ohio would like to acknowledge the following individuals who helped make this report possible.

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Executive Summary

This report, prepared by Green Energy Ohio (GEO), details the capacity to deploy solar and wind energy systems in Ohio's 9th congressional district. It identifies resources for homeowners, businesses, and developers that are needed to effectively install wind and/or solar energy systems on the small or residential scale, mid-size or commercial scale, and utility scale. GEO identified renewable energy installers operating in the area, all applicable incentives available for each scale of development, any local zoning requirements including information on the Ohio Power Siting Board process for utility scale solar and wind development, and interconnection and net-metering agreements from each of the electric utility service providers in the district. GEO calculated the potential for solar development on residential and commercial rooftops, as well as the potential for utility scale wind development in the 9th district. GEO also reviewed an avian study previously performed for the area, and included information on State regulations for wildlife monitoring for utility scale wind projects.

The rooftop analysis for potential solar development followed methods outlined in a National Renewable Energy Laboratory (NREL) report titled *Rooftop Photovoltaics Market Penetration Scenarios.* The analysis yielded 92,878,087 square feet of available residential rooftop space, and 66,047,676 square feet of available commercial rooftop space. The potential installed capacity of the space available amounts to 928.8 megawatts (MW) for residential and 660.5 MW of commercial. Potential production was calculated using the predicted photovoltaic solar resource for a flat plate tilted south at latitude of installation, for the area, or 4.0 to 4.5 kilowatt hours (kWh) per square meter, per day. The potential annual production for residential properties ranges from 12,598 to 14,173 gigawatt hours per year (GWh/yr), enough energy to power between 1.2 million and 1.4 million homes. The potential annual production for commercial properties ranges from 8,959 to 10,078 GWh/yr.

It is important to note that the rooftop space data used in this analysis is based on floor space data from McGraw Hill which is only available by counties and not defined by congressional districts. Thus, the analysis is for the entire area comprising the four counties in the 9th congressional district including all of Lorain and Lucas counties.

The analysis of wind energy potential followed methods used by the National Renewable Energy Laboratory (NREL), to identify windy land (defined to have a predicted capacity factor greater than 30%) and certain areas unlikely to be developed such as wilderness areas, parks, urban areas, airfields, and water features in the district. The results were a total potential windy area of 904.8 square kilometers (349.3 square miles), a potential installed capacity of 4,524 megawatts (MW), and a potential production of 13,347 gigawatt hours (GWh) for the 9th congressional district, enough energy to power 1.3 million homes.

In the current market, the implementation of renewable energy technologies such as solar and wind energy systems involves significant upfront costs for the average home and business owner. The energy costs for utility scale solar and wind energy generation, in Ohio, is generally higher than the cost of energy for conventional power production from old coal fired plants and natural gas plants. Thus, the development of solar and wind systems is quite dependent on available incentives such as federal tax credits, grants, loan guarantees, and the sale of renewable energy credits.

GEO has identified several renewable energy installers with current offices located in the 9th congressional district. Though thought to be sufficient for the current demand for installations in the district, in the event that more incentives are made available or when market conditions result in a decrease of the cost of the technologies, more renewable energy installers will be needed to support demand.

Local zoning requirements for wind energy systems vary across the district, but a few similarities exist. Most of the ordinances set the maximum noise limit at 60 dBA and setbacks are calculated as a factor ranging from 0.5 to 1.5 times the turbine height. Only five local governments have ordinances regulating the installation of solar energy systems. These ordinances include requirements that limit the panels from extending a certain height from the roof, and some require a special use permit for ground mounted systems.

The nearness of the 9th district to Lake Erie makes the area prime wildlife habitat, especially for birds. Any utility scale wind energy development proposed within 3 miles of Lake Erie may be subject to extensive pre-construction surveys to determine the level and timing of species activity, diversity and abundance. These surveys attempt to assess the potential impact that a proposed facility may have either through direct fatalities, or indirectly through avoidance behaviors.

Background

In April 2011, Oberlin College retained Green Energy Ohio, as a subcontractor under a grant awarded to Oberlin College from the Department of Energy's National Energy Technology Laboratory, titled *Energy Transmission and Infrastructure Northern Ohio*. GEO was tasked to perform an evaluation of the capacity to deploy solar and wind technologies in Ohio's 9th congressional district. Following is the scope of work used to complete the evaluation:

1. Evaluate the capacity to deploy solar and wind technologies. GEO will determine what resources are available to deploy solar and wind systems. This will include research of renewable energy installers in the area, incentives available, local zoning requirements, and utility interconnection and net-metering agreements. GEO will compile the research into an evaluation of the potential for deployment including any additional resources that may be needed to effectively utilize the available solar and wind potential to create effective renewable energy systems for the 9th Congressional District. Comprehensive analysis report detailing the wind and solar resource analysis of the 9th District

Ohio's 9th Congressional District consists of all of Ottawa and Erie counties, and portions of Lucas and Lorain counties. Marcy Kaptur is the current district representative. All or part of ten cities (whose population is greater than 5,000) are in the district such as Toledo, Sandusky, Sylvania, Oregon, Maumee, Amherst, Vermilion, Oberlin, Huron and Port Clinton.

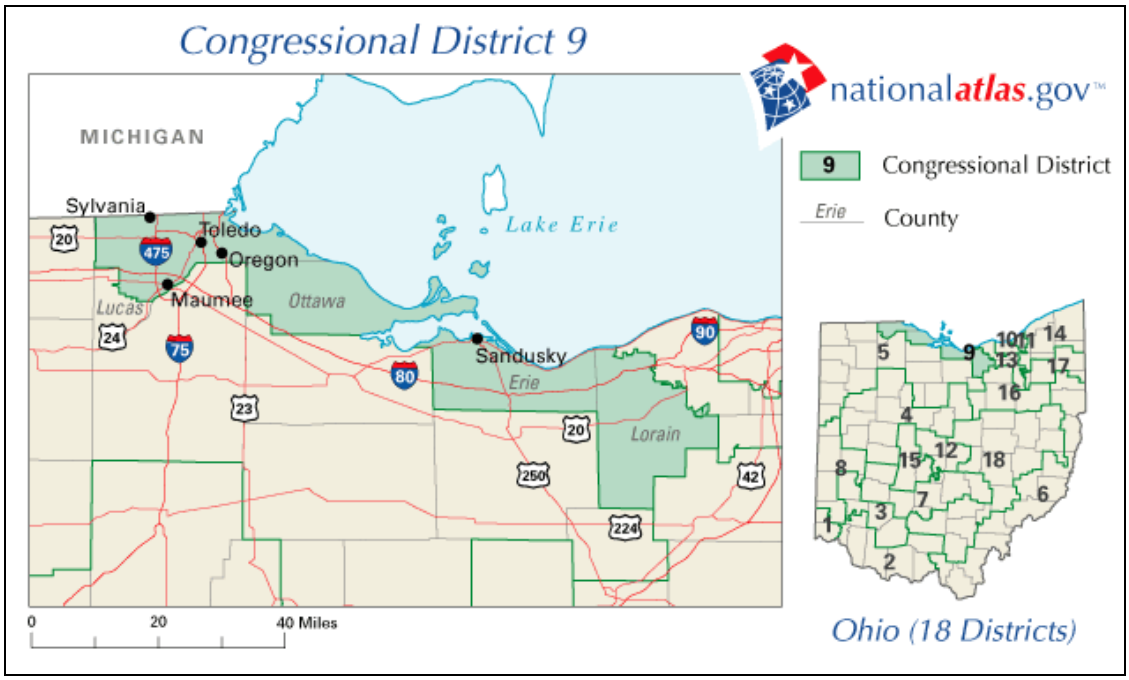

Figure 1: Map of Ohio's 9th Congressional District
(District Boundaries as of September 1, 2011)

Solar Energy Potential

Solar energy systems on the residential and commercial scale are primarily installed on rooftops, but can be ground mounted. Utility scale solar farms, tied directly to the grid and not used in an on-site distribution generation scenario, are usually ground mounted. However, ground mounted systems may take up valuable farmland, commercial green space, and yard space.

GEO followed methodology outlined in the NREL report *Rooftop Photovoltaics Market Penetration Scenarios*. To identify the approximate rooftop space available in the 9th congressional district, floor space data for residential and commercial buildings from McGraw Hill's 2011 Building Stock Database was used. Floor space data were converted to roof space by using data on the average number of floors per building from the Energy Information Administration's (EIA) Residential Energy Consumption Survey (RECS) and Commercial Building Energy Consumption Survey (CBECS) databases.

The following assumptions used are consistent with those in the methodology outlined in the NREL *Rooftop Photovoltaics Market Penetration Scenarios* report. Pitched roofs were assumed to comprise 92% of the residential buildings, and an average pitch of 18 degrees was used to convert flat residential roof space to pitched roof space. Photovoltaic access factors were used to account for shading, building orientation, and roof structural soundness. For residential buildings, an access factor of 25% was used, for commercial buildings, an access factor of 60% was used. A packing factor of 1.25 was used for both residential and commercial rooftops, to account for space needed for the system such as access between modules, wiring, and inverters. Lastly, a system

power density of 10 megawatts per million square feet (MW/million ft^2) was used, which was derived by the NREL report authors from an average module efficiency of 13.5%.

The McGraw Hill floor space data was only available at the county level, and was not available as parsed out data for the 9th congressional district. Thus, data was obtained from each of the four counties in the district, and the analysis covers the entire four (Erie, Lorain, Lucas, and Ottawa) county area, and not just the 9th congressional district.

The rooftop analysis described above yielded 92,878,087 square feet of available residential roof space, and 66,047,676 square feet of available commercial roof space. The potential installed capacity of the space available amounts to 928.8 MW for residential and 660.5 MW of commercial. Potential production was calculated using the predicted photovoltaic solar resource for a flat plate tilted south at the latitude of installation, for the area of 4.0 to 4.5 kWh per square meter, per day. This predicted photovoltaic solar resource relates to a potential production in the range of 12,598 to 14,173 gigawatt hours (GWh) for residential properties, and 8,959 to 10,078 GWh for commercial properties.

Wind Energy Potential

The National Renewable Energy Lab (NREL) provides high-resolution wind speed maps through their Wind Powering America Program. The maps are a result of a collaborative project between NREL and AWS Truepower of Albany, New York. The latest collaboration between NREL and AWS Truepower, was completed in early 2010, and also created estimates of gross capacity factor for 200 meter grid points in the lower 48 states. Capacity factor is the ratio of the amount of power actually produced by the turbine to the amount of power the turbine would produce if there were sufficient sustained wind speeds allowing 100% operation at its rated output over the specified time period. The capacity factor is more representative of the power output from a utility scale wind turbine, while the wind power density is a measure of the theoretical energy available in the wind. Previously, sites were categorized using their annual average wind power density, which is a measure of the amount of energy available for conversion to electricity and measured in watts per square meter [W/m^2]. NREL and AWS singled out locations throughout the U.S. that were estimated to have a gross capacity factor of 30 % or greater at 80 meters. NREL then conducted an analysis of the total available windy land, by eliminating areas unlikely to be developed such as wilderness areas, parks, urban areas, airfields, and water features. The table below shows the results of their analysis for the State of Ohio. Ohio has the potential for 54,919.7 megawatts (MW) of installed wind energy capacity, and an estimated annual production of 151,881 gigawatt hours (GWh). In this latest analysis Ohio ranks as 19th in wind energy potential, when compared to the other 49 states (Estimates of Windy Land Area and Wind Energy Potential).

	Windy Land Area ≥ 30% Gross Capacity Factor at 80 m					Wind Energy Potential	
State	**Total (km^2)**	**Excluded (km^2)**	**Available (km^2)**	**Available % of State**	**%of Total Windy Land Excluded**	**Installed Capacity (MW)**	**Annual Generation (GWh)**
Ohio	17,189.9	6,205.9	10,983.9	10.28%	36.1 %	54,919.7	151,881

Table 1: Estimates of Windy Land Area and Wind Energy Potential for Ohio

Green Energy Ohio followed the methods used by the National Renewable Energy Laboratory in their exclusion analysis described above to determine the total available windy land and wind energy potential for Ohio's 9th Congressional district. In the calculation of wind energy potential, buffers were applied to non-water excluded areas to account for any overlap or nearness issues to the sensitive lands. NREL used a 3 km buffer, however we chose multiple buffers in the instance that nearness issues can be resolved. The wind energy potential calculations for the 9th district were performed using no buffer, a 1km buffer, and a 3 km buffer. Results of the analysis are depicted in the figures and tables below.

With no buffer applied to the exclusions, the potential energy production in the district is 13,347 GWh per year. Applying a 1 km buffer the potential production is 4,076 GWh per year, and applying a 3 km buffer the potential production is 1,279 GWh per year. Comparing the no buffer scenario from to the 9th district calculations to the state production estimates, the 9th district contains approximately 9% of the potential wind energy production, however, this is an unfair comparison knowing that the production estimate for Ohio were published using a 3km buffer. When comparing the 9th district 3 km buffer scenario with potential wind energy production in Ohio, the district contains approximately 1% of the potential wind energy production in Ohio.

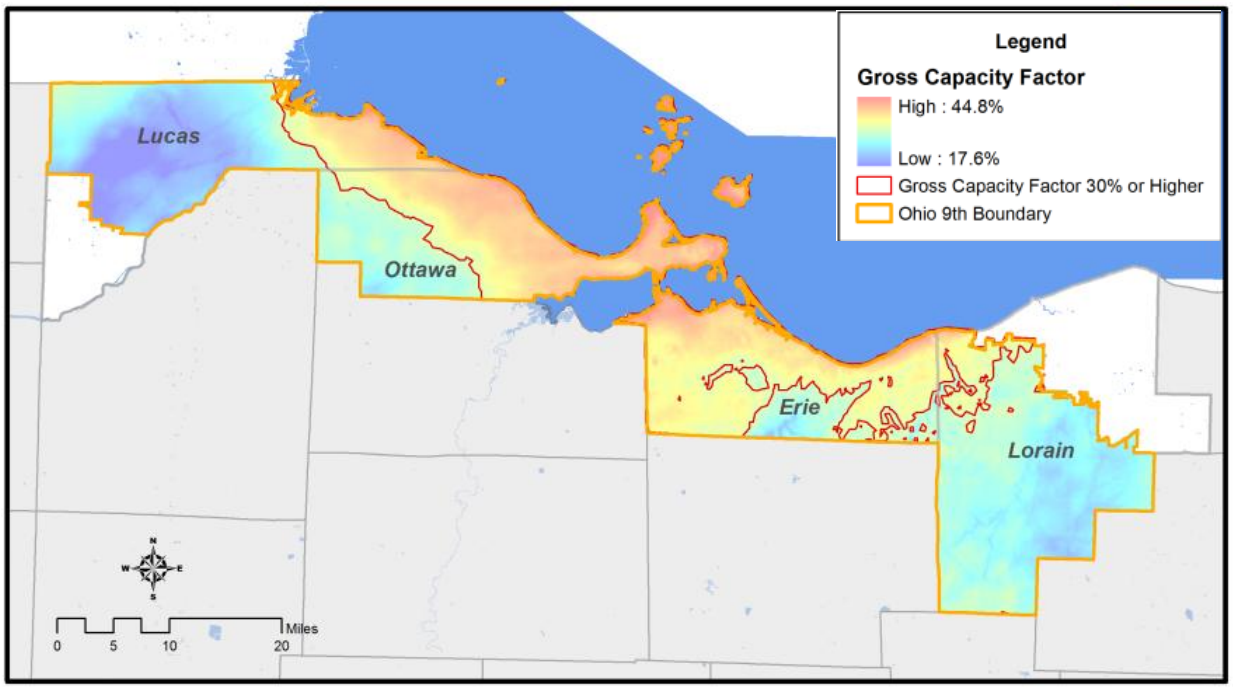

Figure 2: Windy Lands (Capacity Factors Greater than 30% without Exclusions Applied)

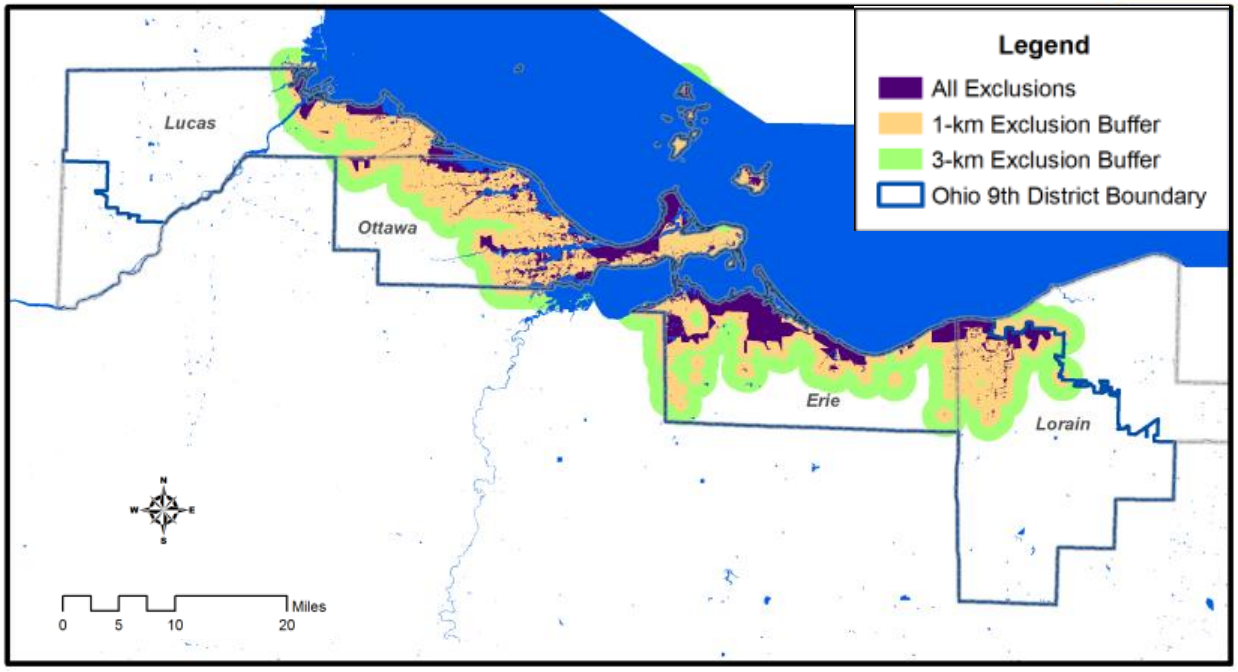

Figure 3: Windy Lands (Capacity Factors Greater than 30% with Exclusions and 1 km and 3 km Buffers)

Ohio 9th Congressional District Total Land Area (km^2)	Windy Land Area Total (km^2)	Windy Land Area % of Total District Land
2,892.4	1,244.0	43.0%

Table 2: Total Land Area and Total Windy Land Area in the 9th Congressional District

Windy Land Area ≥ 30 % Gross Capacity Factor at 80 meters					
Exclusion Buffer [1] (km^2)	Area Excluded[2] (km^2)	% of Total Windy Land Excluded	Available (km^2)	Available % of Windy Land	Available % of District
None	339.2	27.3%	904.8	72.7%	31.3%
1 km	953.2	76.6%	290.8	23.4%	10.1%
3 km	1,149.8	92.4%	94.2	7.6%	3.3%

Table 3: Total Windy Land Area with Exclusions Applied for the 9th Congressional District

Wind Energy Potential			
Exclusion Buffer (km)	Installed Capacity [3] (MW)	Mean Capacity Factor across Available Windy Land	Annual Generation (GWh)
None	4,524.0	0.34	13,347
1 km	1,454.0	0.32	4,076
3 km	471.0	0.31	1,279

Table 4: Wind Energy Potential in the 9th Congressional District

Renewable Energy Incentives

As mentioned earlier, in the current market, renewable energy technologies such as solar and wind energy systems are beyond the budgets of the average home and business owner. The energy costs of utility scale solar and wind energy, in Ohio, are generally higher than the energy costs of conventional power production from old coal fired plants and natural gas plants. Thus, the development of solar and wind systems is usually dependent on available incentives such as federal tax credits, grants, loan guarantees, and the sale of renewable energy credits. For more detailed information on incentives refer to the Database of State Incentives for Renewables and Efficiency at www.dsireusa.org. For small residential and commercial installations, it is generally recommended that the customer contact their utility provider to inquire about incentives available through the local utility.

[1] Exclusion buffers of 1 and 3 km were applied to the non-water excluded areas.
[2] Excluded lands include protected lands (national parks, wilderness, etc.), incompatible land use (urban, airports, wetland, and water features), and other considerations. See 9th District Exclusion Table in Appendix A for full listing.
[3] Assumes 5 MW/km^2 of installed nameplate capacity

Incentives for Small or Residential Renewable Energy Installations

Federal

Residential Renewable Energy Tax Credit

The Residential Renewable Energy Tax Credit is a federal tax credit valued at 30% of the installed cost of a solar or wind energy system. There is no maximum credit for systems installed after December 31, 2008. Any excess credit can be carried forward into the next tax year. The residential renewable energy tax credit program currently expires on December 31, 2016 and is only available for residential installations. In the case of solar and wind energy systems, the home served by the system does not have to be the taxpayer's principal residence.

USDA Rural Energy for America Program (REAP) grants

The U.S. Department of Agriculture offers grants through their Rural Energy for America Program. The program is intended to promote renewable energy development for rural small for-profit businesses and agricultural producers. The grants are for various renewable energy systems including wind and solar energy systems. Grants cannot exceed 25% of the total eligible project costs, with the maximum request being $500,000. The USDA notes that priority consideration will be given to projects requesting less than $20,000. To be eligible for the program, you must be a rural small business, or be an agricultural producer receiving 50% or more of your gross income from agriculture. All projects must be located in a rural area, as determined by the USDA.

USDA Rural Energy for America Program (REAP) loan guarantee

The U.S. Department of Agriculture offers loan guarantees through their Rural Energy for America Program. The loan guarantee cannot exceed 75% of the total eligible project costs. The minimum guarantee is $5,000, while the maximum is $25,000,000. The percentages of the guarantees vary with the size of the loan guarantees and are detailed in the table below.

Loan Guarantee Amount	Maximum Percentage of Guarantee
Up to $600,000	85%
$600,000 - $5,000,000	80%
$5,000,000 - $10,000,000	70%
$10,000,000 - $25,000,000	60%

Table 5: Maximum Percentages of USDA Loan Guarantees

To be eligible for the program, you must be a rural small business, or be an agricultural producer which receives 50% or more of their gross income from agriculture. All projects must be located in a rural area, as determined by the USDA.

State

Advanced Energy Fund

The Advanced Energy Fund is administered by the Ohio Department of Development's Energy Resources Division and supports investments in renewable energy and energy efficiency projects in the industrial, commercial, agricultural, public, and residential sectors. Since the program began in 1999, it has invested more than $33 million in more than 560 advanced energy projects. The Advanced Energy Fund was funded by a $0.09/month rider, provided under ORC 4928.61, and applied to utility bills of those in the four investor owned utilities: AEP – Ohio, Dayton Power & Light, Duke Energy, and First Energy. The rider expired on December 31, 2010. The program has been temporarily suspended, and is currently being restructured to be better aligned with market conditions. A new program is expected to be released in the fall of 2011.

Renewable Energy Credits (RECs)

In May of 2008, Ohio enacted S.B. 221 which requires the four investor-owned utilities in Ohio to procure advanced energy and renewable energy generation. AEP-Ohio, Dayton Power & Light, Duke Energy, and First Energy must provide 25% of their retail electricity supply from alternative energy resources by 2025. Alternative energy resources include renewable energy resources (such as wind and solar) and advanced energy sources such as clean coal, advanced nuclear, energy efficiency, fuel cells, co-generation, and certain solid waste. The end target of renewable energy is 12.5% by 2025, with minimum contribution from solar of 0.5%. At least half of the renewable requirement (6.25%) must be generated within the state of Ohio. As an alternative to acquiring renewable generation, utilities may purchase Renewable Energy Credits (REC) from other generators. A REC is a tradable, non-tangible energy commodity which represents the environmental benefits of the power produced by a renewable energy system, and is unbundled from the electricity. One REC is earned for each megawatt hour (MWh) of electricity produced from a renewable energy system, and each REC has a lifetime of five years following their initial acquisition. To be an eligible generator of RECs, one must register with the Public Utilities Commission of Ohio (PUCO) to become a certified facility. The generator must also register with an attribute tracking system, such as PJM-GATS or M-RETS.

The price of RECs is effectively capped by the compliance payments set in S.B. 221. Because there is a solar carve out in S.B. 221, there is also a separate Solar Alternative Compliance Payment (SACP). The SACP was set at $450 per MWh in 2009, was reduced to $400 per MWh in 2010 and 2011, and will decrease by $50 every two years thereafter to a minimum of $50 per MWh in 2024. The renewable compliance payment, for non-solar renewable generation, was set at $45 per MWh for 2009 and 2010, and is to be adjusted annually by the PUCO to reflect any change in the Consumer Price Index. Because the Solar Alternative Compliance payment is set higher, solar RECs, or SRECs, can be sold at a higher price than non-solar RECs.

Once certified, customers can sell their RECS to utilities or REC brokers. Currently, Duke Energy Ohio and FirstEnergy have residential REC purchase

programs. American Electric Power and Dayton Power & Light have filed similar programs that are awaiting PUCO approval.

Green Energy Ohio Solar Thermal Rebate Program
Green Energy Ohio offers a Residential Solar Thermal Rebate Program for Ohioans. The rebate encompasses solar water heating systems purchased after April 1, 2009 on owner-occupied residential properties in Ohio for the primary purpose to supplement domestic water heating. Rebates are calculated at $30 per thousand British thermal units, per day (kBtu/day) based on the Solar Rating and Certification Corporation (SRCC) data on the chosen system. The maximum rebate amount is $2,400 per applicant.

Net-Metering
Customers of the four investor-owned utilities in Ohio (AEP-Ohio, Dayton Power & Light, Duke Energy, and First Energy), who generate electricity from a renewable energy system are permitted to enter into a net-metering arrangement with their utility. The arrangement works as such; in the event that the customer produces excess electricity that is not immediately used by the customer, that excess is fed onto the grid and the customer receives a credit for the electricity entering the utility's distribution system. The credit can be used to offset charges for electricity needed from the utility in future months, or a customer may apply in writing for a refund of credits accumulated over a 12 month period. The credit received is limited to the kWh charges only, and does not apply to distribution or transmission service charges. To be eligible for net-metering, the solar or wind system must be connected in parallel to the utility distribution system, the equipment must be intended to primarily offset part or all of the customers electricity needs, and the equipment must be located on the customer's property. The four investor-owned utilities are required by law to offer net-metering to their customers. Municipal electric systems and rural electric cooperatives are not required to offer net-metering, however, many do.

Local

Special Energy Improvement Districts/ PACE Financing
Legislation passed in Ohio in July 2009 expanded the existing special improvement district (SID) law by allowing local municipalities and townships to create special energy improvement districts that offer property owners financing to install solar electric and solar thermal systems. In June 2010, legislation passed to allow financing for geothermal, wind, biomass, and gasification systems rated at 250 kW and below. Municipalities that choose to establish a SID are authorized to issue bonds, and/or apply for state or federal money to fund the program. Any property owner opting into the SID that installs a solar or wind system permanently affixed to the property using the funding from the municipality must agree to a special assessment on the property tax bill for up to 30 years to pay for the financing secured by the municipality through this mechanism.

It should be noted that the Federal Housing Financing Agency (FHFA) issued a statement in July 2010 concerning the senior lien status of most PACE programs. As a result of this statement, most local PACE programs have been suspended

until further clarification is provided. However, some commercial PACE programs are moving forward in the state.

Incentives for Mid-Sized or Commercial Renewable Energy Installations

Federal

Business Energy Investment Tax Credit (ITC)
The Business Energy Investment Tax Credit (ITC) is a corporate tax credit available to businesses that install a solar or wind energy system. The tax credit is valued at 30% of the installed cost of the system, and there is no cap on the credit. Wind turbines are limited to 100 kW or less. The credit is available for systems placed in service on or before December 31, 2016. Passage of The American Recovery and Reinvestment Act in 2009 allows taxpayers that are eligible for the Production Tax Credit (PTC) to take the ITC, or receive a grant from the U.S. Treasury Department in lieu of the PTC.

U.S. Department of Treasury – Renewable Energy Grants/Section 1603 Program
Businesses eligible for the PTC or ITC, may opt for a Treasury Grant valued at 30% of the installed cost of a system, if the system is placed in service or construction begins by December 31, 2011. The deadline for applying for the grant is October 1, 2012.

USDA Rural Energy for America Program (REAP) Grants
The USDA REAP grants are available for mid-sized or commercial projects, as long as the eligibility requirements are met; you must be a rural small business, or be an agricultural producer receiving 50% or more of your gross income from agriculture. See description above in Incentives for Small or Residential Renewable Energy Installations.

USDA Rural Energy for America Program (REAP) Loan Guarantee
The USDA REAP loan guarantees are available for mid-sized or commercial projects, as long as the eligibility requirements are met; you must be a rural small business, or be an agricultural producer receiving 50% or more of your gross income from agriculture. See description above in Incentives for Small or Residential Renewable Energy Installations.

Advanced Energy Fund
The Advanced Energy Fund is administered by the Ohio Department of Development's Energy Resources Division and supports investments in renewable energy and energy efficiency projects in the industrial, commercial, agricultural, public, and residential sectors. See description above in Incentives for Small or Residential Renewable Energy Installations.

Renewable Energy Credits (RECs)
See description above in Incentives for Small or Residential Renewable Energy Installations.

Modified Accelerated Cost-Recovery System (MACRS)

Through the federal Modified Accelerated Cost-Recovery System (MACRS), businesses can recover their investments in certain renewable energy property through depreciation deductions. Solar and wind systems are classified as having five-year class lives, over which the property may be depreciated. The passage of *The Tax Relief, Unemployment Insurance Reauthorization, and Job Creation Act of 2010* extended the bonus depreciation for property placed in service after September 8, 2010 and before January 1, 2012. Bonus depreciation allows for 100% first-year depreciation. For the year 2012, the bonus depreciation is still available, but is reduced to 50% of the eligible basis.

Net-Metering

See description above in Incentives for Small or Residential Renewable Energy Installations.

Local

Special Energy Improvement Districts/ PACE Financing

See description above in Incentives for Small or Residential Renewable Energy Installations.

Incentives for Utility Scale Renewable Energy Installations

Federal

Renewable Electricity Production Tax Credit (PTC)

The federal renewable electricity production tax credit (PTC) is a per-kilowatt-hour tax credit available for electricity generated by a qualified energy resource and sold to an unrelated person during the taxable year. The PTC was originally enacted in 1992, and has been renewed and expanded numerous times. The PTC is available for wind projects, but not solar electric or solar thermal projects. For wind projects that are placed in service by December 31, 2012, the credit amount is 2.2 ¢ per kWh, and continues for 10 years after the facility is placed in service.

Renewable Energy Production Incentive (REPI)

The Renewable Energy Production Incentive is a performance-based incentive available to local, state, and tribal governments, municipal utilities, rural electric cooperatives and native corporations. The REPI is applicable to solar electric, solar thermal electric, wind, and other renewable energy systems. The credit is for 2.2 ¢ per kWh, but is subject to the availability of annual appropriations in each federal fiscal year of operation. The credit is available for 10 years after the facility is placed in service, and systems must be placed in service by October 1, 2016. The REPI was designed to complement the PTC which is available only to businesses that pay federal corporate taxes.

Renewable Energy Installers

Green Energy Ohio maintains a directory of renewable energy installers on their web site. To be included on the list, an installation company must be an active installer in the State of wind, solar, or geothermal energy systems. Inclusion on this list does not indicate an endorsement by Green Energy Ohio. Installers that currently have offices located in the 9th congressional district have been identified below; there are however numerous installers located outside of the district that serve the district area. A complete list of installers working in the state is available from the GEO web site at http://www.greenenergyohio.org/page.cfm?pageId=315. GEO does recommend that consumers choose installers that are certified by the North American Board of Certified Energy Practitioners (NABCEP, www.nabcep.org). Installers that have at least one employee that is NABCEP certified are denoted in the table below with an asterisk (*).

Solar Electric System Installers

Erie County

Edison Solar & Wind
3809 State Route #113 E
Milan, OH 44846
419-499-0000
info@edisonsolar.net
www.edisonsolar.net

Lorain County

Alternative Energy Resources
15004 Kneisel Road
Vermilion, OH 44089
440-396-6810
cfrancis@alternativeenergyinc.net
www.alternativeenergyinc.net

Lake Erie Electric*
7495 Industrial Parkway
Lorain, OH 44053
440-835-5565
twhitby@leeinc.com
www.lakeerieelectric.com

Lucas County

Advanced Distributed Generation LLC*
2500 Dorr Street
Toledo, OH 43607
419-530-3792
jwitte@advanced-dg.com
www.advanced-dg.com

Lucas County (cont.)

Dovetail Solar and Wind *
2600 Dorr Street
Toledo, OH 43606
(419) 913-0317
bgonring@dovetailsolar.com
www.dovetailsolar.com

Ohio Solar Wind Energy Solutions LLC
2231 Hinde Road
Toledo, OH 43607
419-578-7338

Stoneacre Energy Solutions
833 South Raab Road
Swanton, OH 43558
419-491-4685
keiths@stoneacreenergysolutions.com
www.stoneacreenergysolutions.com

Solar Thermal Energy System Installers

Erie County
Engineered Process Systems, LTD.
205 Sprowl Road
Huron, OH 44839
419-433-7048
info@bestuseofenergy.com
bestuseofenergy.com

Lucas County
Advanced Distributed Generation, LLC*
2500 Dorr Street
Toledo, OH 43607
419-530-3792
www.advanced-dg.com
jwitte@advanced-dg.com

Lucas County (cont.)
Dovetail Solar and Wind*
2600 Dorr Street
Toledo, OH 43606
(419) 913-0317
www.dovetailsolar.com
bgonring@dovetailsolar.com

Solar Solutions and Skylights
1758 Tremainsville Road
Toledo, OH 43613
419-244-4759
solarsam1972@yahoo.com
www.solarsolutionsandskylights.com

Wind Energy System Installers

Erie County
Edison Solar & Wind
3809 State Route #113 E
Milan, OH 44846
419-499-0000
info@edisonsolar.net
www.edisonsolar.net

Engineered Process Systems, LTD.
205 Sprowl Road
Huron, OH 44839
419-433-7048
info@bestuseofenergy.com
bestuseofenergy.com

Green Energy Wind & Power, LLC
607 Main Street Suite C
Huron, OH 44839
419-616-0018
info@greenewindpower.com
http://greenewindpower.com

Ohio Wind Turbines
10407 Main Road
Berlin Heights, OH 44814
1-888-379-6387
info@ohiowindturbines.net
http://ohiowindturbines.net

Erie County (cont.)
SUREnergy
319 Howard Drive
Sandusky, OH 44870
http://www.SUREnergy.us

Lorain County
Alternative Energy Resources
15004 Kneisel Road
Vermilion, OH 44089
440-396-6810
http://alternativeenergyinc.net

Clyde Industrial LLC
36554 South Reserve Circle
Avon, OH 44011
440-653-1062
porter@clydeindustrial.com
www.clydeindustrial.com

Lake Erie Electric*
7495 Industrial Parkway
Lorain, OH 44053
440-835-5565
twhitby@leeinc.com
www.lakeerieelectric.com

Lorain County (cont.)
LTI Power Systems
10800 Middle Ave Hanger B
Elyia, OH 44035
440-327-5050
www.ltipowersystems.com

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Local Zoning

Zoning ordinances were gathered and reviewed from nearly all of the 77 local governments in the 9th district including municipalities, townships and counties. Key details of the ordinances that contained regulations pertaining to wind and solar energy system installations are listed in Appendix B: Zoning Ordinance Specifications. It should be noted that the ordinance information provided may not reflect changes made since this information was collected, as new legislation may have been adopted by the local governments. The information provided in Appendix B is for informational purposes only. An official copy of the ordinance in question should be consulted before any development action is taken.

Ohio Power Siting Board – Utility Scale Wind & Solar Permitting

Before a "major utility facility" may begin construction, the builder must apply for and receive a certificate of environmental compatibility and public need from the Ohio Power Siting Board (OPSB). The OPSB defines major utility solar facilities as those rated at 50 MW and above. The passage of House Bill 562 directed the Ohio Power Siting Board (OPSB) to prescribe reasonable regulations concerning the siting and construction of wind energy generating facilities with an aggregate capacity of 5 MW or greater. Issues concerning erosion control, aesthetics, recreational land use, wildlife protection, as well

as environmental considerations concerning noise, shadow flicker and other issues are addressed in the rules. The siting rules took effect May 7, 2009.

Although project approval and certification are under the authority of the OPSB at the state level, local governments and citizen's groups have the opportunity to participate in public information, outreach and input opportunities as part of the OPSB approval process. Following is a brief description of the OPSB major energy facilities siting process.

The initial step to filing an application with the OPSB requires the applicant to submit a pre-application letter to the Board, and, after the required notice, hold a public informational meeting. Once the pre-application requirements are met, the applicant may then submit an application. The OPSB then has up to 60 days to review the application for completeness, and if it meets their requirements, the OPSB will issue a letter of completeness to the applicant. If the application is not complete, the OPSB will respond to the applicant with the application's inadequacies.

Upon acceptance of the application, an official filing date is set along with dates and locations for the local public hearing and adjudicatory hearing. The first public notice of the filing must be published by the applicant within 15 days of the filing date of the accepted application. The OPSB has 60-90 days after the acceptance of the application to commence the public hearing, with a staff report issued at least 15 days prior to the public hearing. A second public notice must also be issued 7–21 days before the public hearing.

The local public hearing is held near the project location. An adjudicatory hearing follows at the offices of the Public Utilities Commission of Ohio (PUCO). After the adjudicatory hearing, the OPSB makes the decision to issue or deny a certificate to allow construction. After the Board reaches a decision, any party to the case has the opportunity to appeal a Board decision by requesting a rehearing and, after rehearing, a Supreme Court appeal.

At any time during the application process, the public may participate in the process by making informal written submissions or phone calls or providing sworn testimony at public hearings. In addition, the public may formally make a request for intervention. For more information or to view applications and intervention requests visit the OPSB web site: www.opsb.ohio.gov.

Utility Interconnection & Net-Metering Agreements

Customers who generate electricity from a renewable energy system, and wish to take advantage of a net-metering arrangement must interconnect with their electric utility. An interconnection agreement serves as the agreement between the electric utility and a customer who owns a renewable energy system and wants to connect to the grid. In some cases, the interconnection and net-metering agreement is the same document. GEO identified each of the electric utilities in the 9th congressional district, and gathered any standard interconnection and net-metering agreements available.

There are a total of 14 electric utility companies serving the 9th District, as depicted in the table and figure below. Toledo Edison and Ohio Edison serve the largest area in the district, and are subsidiaries of First Energy. There are three rural electric cooperatives, and nine municipal electric systems serving the remainder of the district. Buckeye Power, Inc., an electricity generating and transmission cooperative that was formed and is owned by the 25 distribution cooperatives in the State, supplies electricity to the rural electric cooperatives, and also has provided interconnection and net-metering agreements to each of the rural co-ops for adoption. It should be noted that some of the municipal electric utilities do not currently have an interconnection agreement available for customers, or are in the process of drafting an agreement. Interconnection agreements for First Energy and for the other utilities in the district that have interconnection agreements can be found in Appendix C.

Utility	Counties of Service	Interconnection Agreement?
Amherst Municipal	Lorain	None
Elmore Municipal	Ottawa	Currently Drafting
Firelands Rural Electric	Lorain	Yes
Genoa Municipal	Ottawa	Did not respond to Inquiries
Grafton Municipal	Lorain	Did not respond to Inquiries
Hancock-Wood Rural Electric	Erie	Yes
Huron Municipal	Erie	None
Lorain-Medina Rural Electric	Erie, Lorain	Yes
Milan Municipal	Erie	None
Oak Harbor Municipal	Ottawa	Currently Drafting
Oberlin Municipal	Lorain	Currently Drafting
Ohio Edison	Erie, Lorain, Ottawa	Yes
Toledo Edison	Lucas, Ottawa	Yes
Wellington Municipal	Lorain	Moratorium on construction to draft new zoning and interconnection legislation

Table 7: Electric Utilities Serving Ohio's 9th Congressional District

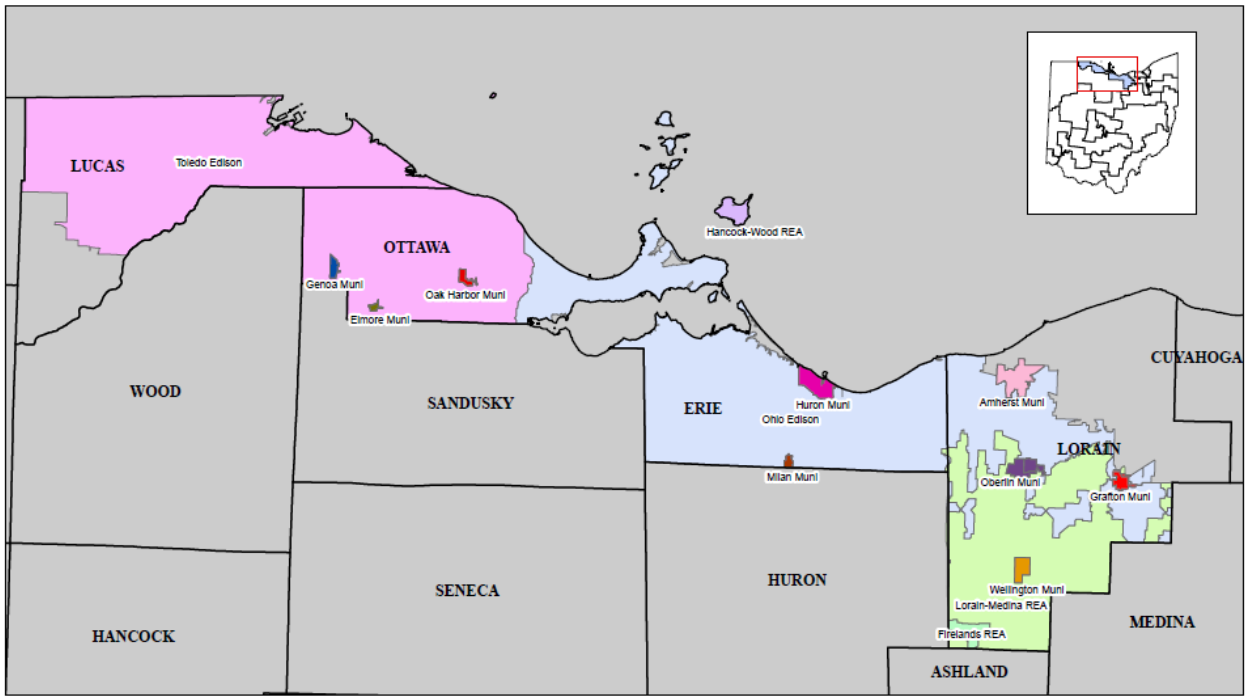

Figure 4: Map of Electric Utility Companies in Ohio's 9th Congressional District

Wildlife and Utility Scale Wind Energy

Bird and bat fatalities are unavoidable consequences of wind energy development. However, careful siting of the turbines to reduce risks to birds and bats can reduce fatalities. Currently, wind developers work closely with the Ohio Department of Natural Resources and the U.S. Fish & Wildlife Service for pre-construction and post-construction wildlife studies, as well as "take" permits for endangered or threatened species. Mitigation techniques to decrease bird and bat mortality include minimum intensity strobe lighting of the turbines, minimizing perches by requiring monopole towers and burying electric cables, eliminating the use of guyed structures such as meteorological towers, limiting necessary tree-clearing activities to specific dates to avoid incidental takings of bats that nest in the trees, feathering the blades during low-wind speed evenings, and avoiding raptor nests of protected species by using at least a ½ mile setback. Small or residential wind turbines do not pose as great a threat to birds and bats due to their small size.

Birds

GEO and AWS Truewind, LLC coordinated the Northwest Ohio Coastal Wind Initiative for the Toledo-Lucas County Port Authority. As a part of the Initiative, Curry & Kerlinger, L.L.C. avian/wildlife consultants, completed a feasibility study to assess potential avian risk for the construction and operation of a small demonstration wind farm. The study was titled *Feasibility Study of Potential Avian Risk from Wind Energy Development*, and was released on October 17, 2007.

“The study area was the coastal plain along Lake Erie (from the lakeshore to three miles inland) from Toledo to Lorain, Ohio, including portions of Lucas, Ottawa, Sandusky, Erie, and Lorain Counties. The demonstration wind farm would consist of up to five wind turbines, but a likely development scenario would be one or two turbines. For the purpose of analysis, these wind turbines were assumed to have 2.0-MW production capacities, with 87-m (285-foot) rotors on 80-m (262-foot) towers. Such turbines would have a structural height of 124 m (407 feet). They would be sited on a land area of about 1 to 2 square kilometers (0.4 to 0.8 square miles).

The objectives of this study were:

- Summarize bird use of the study area and identify areas of high bird use and significant habitat;
- Summarize known risks to birds at wind power facilities in the United States;
- Assess broad patterns of potential risk to birds throughout the study area;
- Establish and implement a stakeholder process with respect to avian and other wildlife issues; and
- Identify the need for further pre- and post-construction studies at prospective project sites, along with specific recommendations for risk research.

To accomplish these objectives, Curry & Kerlinger conducted an exhaustive literature search including evaluation of existing data bases, visited the study area from May 13 to 18, 2007, to assess habitat and bird distribution, and convened meetings on May 16 and 17 with wildlife agencies and nonprofit environmental organizations, in addition to participating in a stakeholder meeting in February 2007.

The western part of the study area (from the Huron River west) is a flat plain abutting Lake Erie that was once the Great Black Swamp, a rich natural area of elm-ash forest, marshes, prairies, and rivers. The swamp was drained in the late-1800s, creating what are now Ohio’s most productive and intensively cultivated lands. Presently, the “Black Swamp” section of the study area is roughly estimated at 65% agricultural lands (of which a small percentage is woodlots), 20% natural areas (including a large number of protected areas), and 15% urban, settled, and industrial areas (cities of Toledo and Sandusky).

Eastern portions of the study area are different, with less agriculture (25% of total), more woodland in larger blocks (35%), and more residential and urban development (40%). It has a much lower density of natural areas, which are confined primarily to wooded stream corridors and their outlets.”

“Relative to the rest of Ohio and most of the Midwest, the percentage of natural areas within the study area is very high, particularly in the western portion. It is indeed significant that the study area contains two national wildlife refuges (NWRs), numerous state wildlife areas (SWAs), and other significant protected areas. These have been established to manage and protect extremely valuable wildlife habitat, particularly for waterfowl, but also for other bird groups, such as shorebirds, wading birds, rails, migratory songbirds, grassland birds, listed, and other species. It is perhaps not surprising that the entire study area falls within an Avian Concern Zone as identified by the U.S. Fish and Wildlife Service (FWS) and the Division of Wildlife (DOW) of the Ohio Department of Natural Resources (ODNR). In addition, most of the study area falls

within three Important Bird Areas (IBAs) identified by Audubon Ohio. The largest of these is named the Lake Erie Western Basin. It contains thirteen focus sites, including the two NWRs and most of the SWAs. Five of these focus sites are also included by the American Birds Conservancy on its list of the 500 most important IBAs in the United States.

The study area is heavily settled outside of the agricultural and wildlife areas. The largest population centers are the cities of Toledo, Sandusky, and Lorain. Lake Erie is also an important recreational area for Ohioans. In addition, industrial infrastructure is a major landscape feature, including two coal-fired power plants, one nuclear power station, hundred of miles of high-voltage transmission lines, perhaps a dozen tall communications towers, and numerous cell-phone towers. This infrastructure challenges birds using the airspace."

"With regard to migration, the study area is an important stopover area for night-migrating songbirds, waterfowl, and shorebirds. Night-migrating songbirds may occur in wooded habitats throughout the study area, but their highest densities are found in beach-ridge woodlands along the lakeshore. Waterfowl and shorebirds are attracted to the region's wetlands, where they concentrate, but they also visit agricultural areas to feed on waste grain (in the case of waterfowl) or on invertebrates in flooded fields (in the case of shorebirds).

The region also experiences a significant diurnal migration of raptors and songbirds (such as Blue Jays, American Crows, blackbirds, etc.) particularly in the spring, when Lake Erie poses a significant barrier to northward flight, but this migration is not as concentrated as what the north shore of Lake Erie experiences in the fall, nor does it appear to be as concentrated as at the eastern end of Lake Erie in New York State."

"With respect to wintering birds, Christmas Bird Count (CBC) data indicate that peak bird frequency and diversity occur along the shores of Lake Erie and Sandusky Bay, and in managed wildlife areas, with very large numbers of gulls and waterfowl. In residential, woodland, and agricultural areas, bird frequency is much lower, including that of raptors.

Impacts to birds at wind-energy sites are: 1) disturbance and displacement as a result of the construction and operation of wind turbines and related infrastructure, and 2) fatalities resulting from collisions with turbines, meteorology towers, and other infrastructure. Some types of birds are disturbed and displaced more by wind turbine construction and operation than others. Disturbance and displacement effects have been documented in grassland and prairie birds and in some (not all) waterfowl. Some European studies have demonstrated displacement of shorebirds. Forest birds, on the other hand, do not appear to be disturbed or displaced in a significant way by wind turbine operation. Resident raptors may be displaced by construction activities during nesting season, but they appear to habituate to the turbines after the construction phase. In Spain, migrating raptors have been shown to avoid operating wind turbines more than resident raptors.

Post-construction fatality studies, particularly those that have taken into account searcher efficiency in finding carcasses, as well as carcass removal by scavengers, have demonstrated that fatalities are relatively infrequent events at wind farms. In a recent review of the literature on U.S. wind farms, mortality estimates were similar among projects, averaging 2.51 birds per turbine per year and 3.19 birds per MW per

year. Rates were higher in the eastern U.S. than in the west, because of the denser nocturnal migration of songbirds in eastern North America. No federally listed endangered or threatened species have been recorded, and only occasional raptor, waterfowl, or shorebird fatalities have been documented. In general, the documented level of fatalities has not been large in comparison with the source populations of these species, nor have the fatalities been suggestive of biologically significant impacts to these species."

"If properly sited to avoid or minimize effects on birds, a demonstration wind farm in the study area will probably avoid all significant displacement impacts on birds, but it will still result in some bird mortality. This mortality is likely to be similar to the rates found at other eastern and Midwestern wind power sites. Perhaps 75% or more would be night-migrating songbirds of a wide variety of species. While is it possible that mortality could be greater, perhaps because of special characteristics of the western Ohio lakeshore region, it is unlikely to be much greater and not likely to be significant from a biological perspective" (Kerlinger et al. 2-5)

Kerlinger recommends the siting criteria outlined in Table 8 below. Siting criteria "are based on what is known about wind-energy development's effects on birds (see Section 5.0) and on research and analysis specific to the study area and nearby areas (e.g., Ewert et al. 2005, Erie Shore Wind Farm). Setbacks may be relaxed subject to the results of the post-construction studies recommended below.

Exclusion Zones	
All NWRs, SWAs, and IBA focus sites Shoreline zone <400 m (<0.25 miles) of Lake Erie	
Buffer Zones	
To Avoid/Minimize Displacement/Disturbance	**Distance[4]**
Multi-designation NWRs, SWAs, and other sites[5]	**800 m**
Bald Eagle nests	**800 m**
Wetlands >1 ha (>2.5 acres) that concentrate waterfowl	**600 m**
High-diversity grassland bird areas	**200 m**
To Minimize Collision Mortality	
Woodland >1 ha (>2.5 acres) and <400 m (<0.25 mile) from Lake Erie[6]	**400 m**
Woodland >1 ha (>2.5 acres) and >400 m (>0.25 mile) from Lake Erie	**200 m**
Woodland along N-S river systems	**200 m**

Table 8: Exclusions and Buffers Recommended to Avoid or Minimize Bird Effects

We also recommend that the demonstration wind farm be sited only in cropland or at an existing industrial site. If sited in cropland, a site along an existing transmission or high-capacity distribution line would be preferable" (Kerlinger et al. 68)

Bats

[4] 200 m = 660 feet, 400 m = 0.25 mile, 800 m = 0.5 mile

[5] See Table 24 in Appendix D. These include any IBA focus site that is also listed in the ABC and Stopover categories, specifically Cedar Point NWR, Ottawa NWR, Magee Marsh SWA, Metzger Marsh SWA, Pickerel Creek SWA, Resthaven SWA, and Sandusky Bay.

[6] A 400 m buffer is recommended, but this would be evaluated on a case-by-case basis.

Bats fatalities due to wind turbines typically do not result from direct impact with the blades or tower, but by a condition termed barotrauma. When bats fly through the rotor swept area, they encounter a small area of low air pressure behind the blade. As bats fly through this small area of low pressure, their lungs expand, causing small capillaries to burst, and then their lungs fill with fluid, essentially drowning the bats. Bats fatalities are the greatest during the summer and fall when the bats are migrating and mating.

The 9th congressional district lies within the range of the Indiana Bat (Myotis sodalis), a federally listed endangered species. During the winter, Indiana bats hibernate in caves and abandoned mines. Summer habitat requirements for the species are not well defined but the following are considered important:

- Dead or live trees and snags with peeling or exfoliating bark, split tree trunk and/or branches, or cavities, which may be used as maternity roost areas.
- Live trees (such as shagbark hickory and oaks) which have exfoliating bark.
- Stream corridors, riparian zones, and upland woodlots which provide forage sites.

Depending on how closely a proposed project area matches the above summer habitat criteria, the Fish and Wildlife Service (FWS) may recommend a mist net survey be conducted to document the presence or likely absences of the Indiana bat within the project area during this summer. The survey must be conducted by an approved consultant between May 15 and August 15, when the presence of maternity colonies could be detected. Survey results must be coordinated with FWS prior to the initiation of any ground disturbance work at the Site.

The Ohio Power Siting Board (OPSB) requires developers to implement post-construction avian and bat mortality monitoring plan outlined in the Ohio Department of Natural Resources' *Oh-Shore Bird and Bat Pre-and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio*. The purpose of pre-construction surveys is to document the level and timing of species activity, diversity and abundance in an effort to assess the potential impact that a proposed facility may have either through direct fatalities, or indirectly through avoidance behaviors. Post-construction mortality surveys will validate or refute predictions from pre-construction surveys, and determine if mitigation is warranted to minimize impacts to wildlife. The type of surveying recommended is at the discretion of the ODNR Division of Wildlife, and will be suited for the particular site, but may fit into the categories listed below and depicted in Figure 5. For more details on the survey efforts required for each category consult the *Oh-Shore Bird and Bat Pre-and Post-Construction Monitoring Protocol for Commercial Wind Energy Facilities in Ohio.*

- **Minimum**

  These areas are large tracts of agricultural lands that do not come within 500 meters of a woodland ≥10 hectares, wetlands ≥3 hectares, or large water body (i.e., rivers, lakes or reservoirs).
- **Moderate**

  Primarily agricultural or grasslands, with patches of forests, wetlands, and/or other habitat.

- **Extensive**

  These include those areas within proximity to migratory corridors, staging areas, Audubon Important Bird Areas (IBAs), or the Lake Erie shoreline (3-mile buffer).

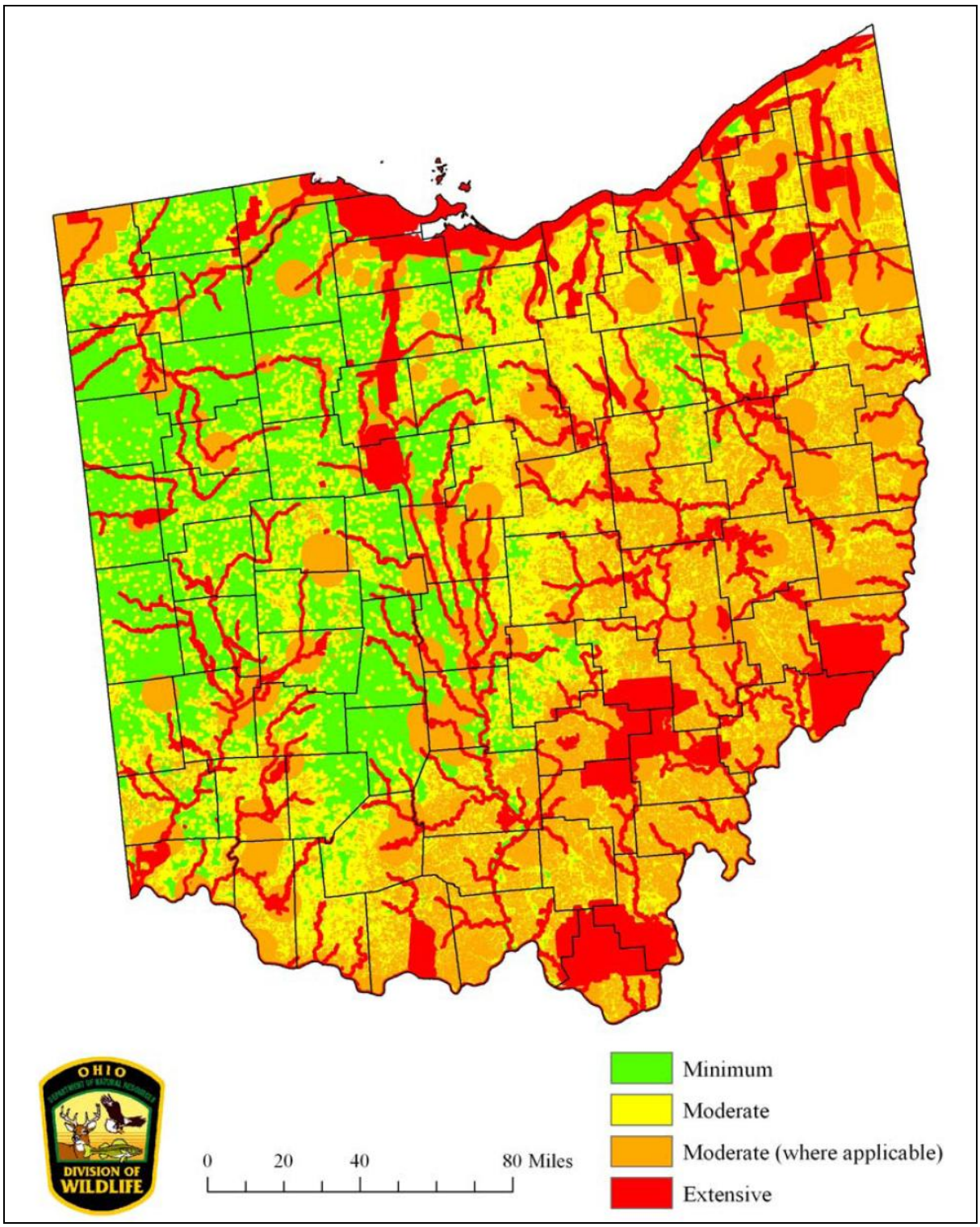

Figure 5: Survey Effort Required by ODNR

Sandhill cranes are listed as an endangered species in Ohio. The Figure below indicated that Lucas County is an area where additional surveying may be recommended.

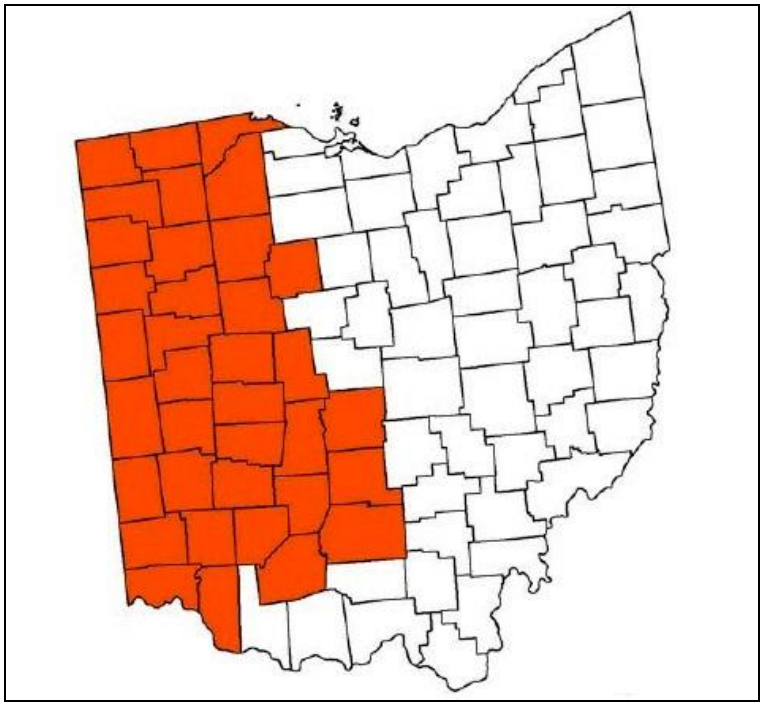

Figure 6: Counties Where Additional Surveying for Sandhill Cranes may be Recommended

Conclusions

This report describes the results of an evaluation of the available capacity for deployment of solar and wind technologies in Ohio's 9th Congressional District.

The rooftop analysis for potential solar development yielded 92,878,087 square feet of available residential rooftop space, and 66,047,676 square feet of available commercial rooftop space in the four counties of Erie, Lorain, Lucas, and Ottawa. The potential installed capacity of the available rooftop space is 928.8 megawatts (MW) for residential and 660.5 MW of commercial. Potential annual production, using the predicted photovoltaic solar resource for a flat plate tilted south at the latitude of installation, ranges from 12,598 to 14,173 gigawatt hours (GWh) for residential properties. This is enough energy to power between 1.2 million and 1.4 million homes. The potential annual solar production for commercial properties ranges from 8,959 to 10,078 GWh.

The analysis of wind energy potential identified windy land (as previously defined to have a predicted capacity factor greater than 30%) and certain excluded areas that are unlikely to be developed such as wilderness areas, parks, urban areas, airfields, and water features in the district. The results of the study shows a total potential windy area

of 904.8 square kilometers (349.3 square miles), and a potential production of 13,347 gigawatt hours (GWh) (no buffer scenario) for the 9th congressional district, enough energy to power 1.3 million homes.

Due to the relatively high costs of wind and solar technologies, the incentives are driving adoption in the current wind and solar energy market. Intermittent state and federal policies do not allow for long-term business planning for adapters, financers, and manufacturers, and it appears imperative that incentives for wind and solar development remain as consistent as possible. Green Energy Ohio has observed a decrease in residential and commercial installations since the expiration of the rider feeding the Advanced Energy Fund. However, the potential to sell the Renewable Energy Credits of the system, a direct effect of the 2008 Renewable Portfolio Standard, and the ability for third party system financing has kept some commercial installations in the works. There have also been significant declines in utility scale wind energy development across the nation during years that the Production Tax Credit has lapsed.

GEO has identified a number of renewable energy installers with offices located in the 9th congressional district. Though thought to be sufficient for the current demand for installations in the district, in the event that more incentives are made available or when market conditions result in a decrease of the cost of solar and wind technologies, more renewable energy installers, or expansion of existing installer businesses, will likely be needed.

Local zoning requirements for wind energy systems vary across the district, but a few similarities exist. Most of the ordinances set the maximum noise limit at 60 dBA and setbacks are calculated as a factor ranging from 0.5 to 1.5 times the turbine height. Only five local governments have ordinances regulating the installation of solar energy systems. These ordinances include requirements limiting the panels from extending a certain height from the roof, and some require a special use permit for ground mounted systems.

The nearness of the 9th district to Lake Erie makes the area prime wildlife habitat, especially for birds. Any utility scale wind energy development proposed within 3 miles of Lake Erie may be subject to extensive pre-construction surveys to determine the level and timing of species activity, diversity and abundance. These surveys attempt to assess the potential impact that a proposed facility may have either through direct fatalities, or indirectly through avoidance behaviors.

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Appendix A: 9th District Exclusion Table

Application Order	*Environmental Criteria*	*Data/Comments:*	*Criteria Type*
1	Exclude areas of slope > 20%	Nothing to exclude in 9th District; calculated slope does not exceed 20% at any point at 200-m resolution. Derived from AWS Truepower 200 m elevation dataset	Other
2	100% exclusion of National Park Service and Fish and Wildlife Service managed lands	USGS Federal Lands shapefile, Dec 2005	Environmental
3	100% exclusion of federal lands designated as park, wilderness, wilderness study area, national monument, national battlefield, recreation area, national conservation area, wildlife refuge, wildlife area, wild and scenic river or inventoried roadless area.	USGS Federal Lands shapefile, Dec 2005; Inventoried Roadless Areas (2004; none in 9th District); BLM Areas of Critical Environmental Concern (2008; none in 9th District).	Environmental
4	100% exclusion of state and private lands equivalent to criteria 2 and 3, where GIS data is available.	State/GAP land stewardship data management status 1, from Conservation Biology Institute Protected Lands database, 2010. Downloaded from Data Basin.	Environmental
5	100% exclusion of airfields, urban, wetland and water areas.	USGS National Landcover Database (NCLD) 2006; ESRI airports and airfields (2010); U.S. Census Urbanized Areas (2010)	Land Use
6	100% exclude 1 km or 3 km surrounding criteria 2-5 (except water)	Merged datasets and buffer 1 km or 3 km	Other
7	50% exclusion of remaining USDA Forest Service (FS) lands (incl. National Grasslands) except ridgecrests	USGS Federal Lands shapefile, Dec 2005. None in gross_cf30 windy area.	Other
8	50% exclusion of remaining Dept. of Defense lands	Military Installations, US Census TIGER, 2010.	Environmental
9	50% exclusion of state forest land, where GIS data is available	State/GAP land stewardship data management status 2, from Conservation Biology Institute Protected Lands database, 2010.	Environmental
10	50% exclusion of non-ridgecrest forest	Ridge-crest areas defined using a terrain definition script, overlaid with USGS NLCD data screened for the forest categories.	Land Use
Approach: (a) Merge layers 1-5, except open water areas. (b) Create 1km and 3km buffer around merged geographies and exclude from windy land area. (c) Exclude open water without buffer. (d) Calculate area for layers 7-10 and subtract 50% from windy land area. (e) Calculate average gross capacity factor across remaining windy land area. *Note: 50 % exclusions are not cumulative. If an area is non-ridgecrest forest on FS land, it is just excluded at the 50 % level one time.*			

Table 9: Wind Resource Exclusions for Estimate of Ohio 9th Congressional District Wind Power Potential

Appendix B: Zoning Ordinance Specifications

Note: Turbine height is defined as the height of the system at its maximum vertical extension. For horizontal axis turbines, the height of the turbine includes the height from the ground to the tip of the blade when the tip is at its highest point.

Table 10: Table 11 Color Codes

Townships
Cities & Villages

Table 11: Erie County Wind Ordinances for Low Impact or Small Systems

Government/Type of Wind Turbine	Conditionally Permitted?	Size Limit (Max.)	Height Limit (Max.)	Height Limit (Min.)	Fall Zone/Setback	Noise Restriction (Max.)
Berlin Township	Yes in all districts, 1 per property unless a lot of ≥ 50 acres than 2		100 ft		Height plus 10 ft from all neighboring property line, guy wires shall maintain 10 feet from property lines and structures	60 dBA
Florence Township/Low Impact (≤ 100 kW)	Permitted use	100 kW	100 ft		1.5 x of height to property line, off-site residence, road right-of-way	60 dBA
Huron (city)/ Small Systems	Yes, in any			Blade 30 feet above ground or any structure within 50 feet	1.0 x height from property line, right of way, lines	Not more than 60 dba from 100 feet
Huron Township/ Small Systems	Yes in all districts; need a granted variance for roof, ≥ 1 acre		60 feet for 1-2 acres, 80 feet for 2-5 acres. 100 feet for > 5 acres	Blade 30 feet above any ground or structure	No front yard, 1.0 x height from property line, right of way, lines, off site inhabited structures	60 dba at property line or 50 dba at nearest neighboring inhabited building
Milan Township/ Low Impact (≤100 kW)	No – Permitted use in Agricultural Districts, Local Commercial (C-1) and General Commercial (C-2) Districts, and Industrial Light (I-1), and Industrial (I-2) Districts	100 kW	175 ft		1.25 x of height of turbine from property line, off-site residence and right-of-way; Min. of 50 ft from foundation of main structure; No part of the structure (including guy wires) may extend closer than 10 feet from abutting property lines or easement; Not permitted in front	60 dBA

					yards	
Oxford Township	Permitted uses but each land district provides specific regulations for uses and structures				Height of the tower cannot be greater than the distance to the lot line; height of the turbine is measured to the top of propeller blade extended plus 10 ft. Guy wire shall meet the minimum	60 dbA
Perkins Township/ Small system (1 Turbine)	Need a conditional use permit, not on roof of single family home but OK in C-1,C-2, I-1, I-2, MA zoned, no lot less than one acre		Btwn 1 & 2 acres: 60 ft.; Btwn 2&5: 80 ft.; > 5: 100 ft	30 ft from ground to blades lowest point or 30 ft from any structure in 100 ft	No front or side yard; setback not less than 1.0 x property line, off-site residence, right-of-way, electrical wires	60 dBA measured at property line, or 50 dba
Sandusky (city)/ Small System	Yes, in any district			Blade 30 feet above ground or structure with 30 feet horizontally	Not less than 1.1 to 1.0 x set back from property line, right-of-way, lines	60 dBA measured 100 feet away
Vermilion (city)	Yes, in any district but historic; commercial only in commercial and industrial		100 ft		1.0 x height away from property line, right-of-way, lines	60 dBA
Vermilion Township	Permitted use	100 kW	100 ft		1.0 x height from all neighboring property lines and rights-of-ways	60 dBA

Table 12: Erie County Wind Ordinances for High Impact or Commercial Systems

Government/ Type of Wind Turbine	Conditionally Permitted?	Size Limit (Max.)	Height Limit (Max.)	Height Limit (Min.)	Fall Zone/Setback	Noise Restriction (Max.)
Berlin township	Yes in all districts, 1 per property unless a lot of ≥ 50 acres than 2		100 feet		Height plus 10 feet from all neighboring property line, guy wires shall maintain 10 feet from property lines and structures	60 dBA
Florence Township High Impact (≥100 kW, ≤ 50 MW)	Permitted use	>100 kW	100 feet		1.5 x of height to property line, off-site residence, road right-of-way	60 dBA
Huron (city) Commercial systems	Yes in commercial or industrial districts				1.0 x height from property line, right of way, and inhabited building or lines; not with 1,000 feet of platted subdivision, park, church, school or playground	

Huron Township Commercial Systems	Yes in any commercial or industrial district ≥ 2 acres		200 feet		1.5 x height from property line and right-of-way; not within 500 feet of a platted subdivision, park, church, school, or playground; 1.0 x height from inhabited structure	
Milan Township; High Impact (>100 kW)	No –Not permitted in any residential district – Location must be pre-approved by U.S. F&WS and ODNR				1.5 x height of turbine from property line, off-site residence and right-of-way; Min. of 50 feet from foundation of main structure; No part of the structure (including guy wires) may extend closer than 10 feet from abutting property lines or easement; Not permitted in front yards	60 dBA
Oxford Township	Permitted uses but each land district provides specific regulations for uses and structures				Height of the tower cannot be greater than the distance to the lot line; height of the turbine is measured to the top of propeller blade extended plus 10 ft. Guy wire shall meet the minimum	60 dBA
Perkins Township Commercial System (>1 turbine but <5 MW)	Yes in commercial, agric., indus. districts, no lot <2 acres without variance		200 ft		1.5 x height from property line, right-of-way, inhabited buiding, power or comm. line; not within 500 ft of platted subdivision, park, church, school or playground	
Sandusky (city) Commercial (more than 1)	Yes, in non-residential district				1.0 x height away from property line and right-of-way, inhabited structure, lines; not within 1,000 feet of platted subdivision, park, church, school or playground	
Vermilion (city)	Yes, in any district but historic; commercial only in commercial and industrial		100 ft		1.0 x height from property line, right-of-way, lines	60 dBA
Vermilion Township	Permitted use	100 kW	100 ft		1.0 x height from all neighboring property lines and rights-of-ways	60 dBA

Table 13: Lorain County Wind Ordinances

Government; Type of Wind Turbine	Conditionally Permitted?	Size Limit (Max.)	Height Limit (Max.)	Height Limit (Min.)	Fall Zone/Setback	Noise Restriction (Max.)
Amherst Township	Yes, in (R-AG), (GB-1), (LI)	<5 MW	140 f t	Blade 30 feet from ground	1.1 x height from right-of-way, overhead utility lines, property lines	60 dba at 60 feet
Carlisle Township; Vertical Axis	No - provided that the system meets zoning requirements	15 kW	35 feet	12 feet from the ground to first moving part	1.1 x Height of Turbine	60 dBA
Carlisle Township; Horizontal Axis	Yes - in districts GB-1 and LI-1 (on parcels of one acre or more); in districts RI-1 and RI-2 (on parcels of two acres or more)		90 feet	12 feet from the ground to climbing apparatus; 25 feet from the ground to lowest part of swept area	1.5 x Height of Turbine; Not permitted in front yard	65 dBA
Lagrange (village)	Yes- in all districts where structures of any sort are allowed		≤ ¾ of property width at tower build line or 150 ft, whichever is more restricted		1.5 x height ; 1.0 x height for vertical axis systems; no part of turbine or guide wire anchors may be closer than 5 feet to property boundaries	60 dba
Penfield Township For ≤ 5 mw	Yes, in all districts where structures are allowed in a lot of at least one acre		≤ ¾ of property width at tower build line or 100 feet, whichever is more restricted		No part including guy wires closer than 20 feet to boundaries; min set back of height of tower plus length of blade from any structure or property line; none in front yard	60 dba
Pittsfield Township	Yes, lots more than 2 acres		≤ ¾ of property width at tower build line or 100 feet, whichever is more restricted	Min distance between ground and blade is 12 feet	No part including guy wires closer than 20 feet to boundaries; min set back of height of tower plus length of blade from any structure or property line	60 dba
Wellington (village)	Moratorium on construction to draft new zoning legislation					

Table 14: Lucas County Wind Ordinances

Government; Type of Wind Turbine	Conditionally Permitted?	Size Limit (Max.)	Height Limit (Max.)	Height Limit (Min.)	Fall Zone/Setback	Noise Restriction (Max.)
Harding Township	Permitted as Special Use in agric. district with ≥ 3 acres	≤ 15 kW	100 ft	Min distance between ground and blade is 15 ft	1.25 x height away from property line, dwelling, righ-of-way; no part closer than 10 ft to property line; transmission lines underground	65 dba
Richfield Township	Special Use Permit in Agric. and		120 ft	No less than 15 ft between	Must be free standing, no guy	65 dBA

	agric./resid. when ≥ 2 acres			lowest point of blade and ground	wires; 1.25 x height away from property lines, residence, building and right of way; no part of system can be within 10 feet of boundaries	
Spencer Township	Permitted special use in all districts; notify ODNR, US F & WS, Toledo metro parks	≤ 20 kw in P/O, A, R-A, R-3, MHP, no max for others	120 feet in P/O, A, R-A, R-3, MHP; 150 feet in all others	No less than 20 feet between lowest point and ground	1.25 x height from property line, dwelling, occupied structure and right-of-way	55 dba at nearest property line for P/O, A, R-A, R-3, MHP, hospital, library or school; 65 dba for rest
Springfield Township	Small turbines permitted in RA-3 and RA-4 districts of 3 acres or more, only service one residence		125 feet	No less than 15 feet between lowest point of blade and ground	1.0 x height from any property line, dwelling or right-of-way; no part of system can be within 10 feet of property line; need a 6 ft fence around base unless not climbable for 12 feet	65 dba
Toledo (city) Free standing small wind systems		In resid. ≤ 10 kw, in mutli-dwelling, comm, indus, instit., more is allowed with SUP	65 feet for commercial; 120 feet for industrial and institutional zoned	No party within 20 feet of ground, utility lines, parking area, driveways or sidewalks	1.2 x height; no part including guy wires mas be closer than 10 feet to property line; not in front yard	30 dba from closest property in residential and 55 dba in non-residential
Toledo (city) Micro Wind Systems		In resid. ≤ 10 kW, in mutli-dwelling, comm, indus, instit., more is allowed with SUP		No party within 20 feet of ground, utility lines, parking area, driveways or sidewalks	0.5 x height; no part including guy wires mas be closer than 10 feet to property line; height for building mounted can't exceed max permitted building height by more than 30%; not in front yard	30 dba from closest property in residential and 55 dba in non-residential
Washington Township	Permitted as a Special Use in all zoning districts, must notify ODNR, Fish and Wildlife Dept., Toledo metroparks	in the P/O, R-1A, R-2, R-3, R-4 and MHP Districts, not more than 20 kW; no max in others	120 feet in P/O, R-1A, R-2, R-3, R-4 and MHP; 150 feet in all others	No less than 20 feet between lowest point of blade and ground	Depends on zoning district	55 dba when abutting A, R-1A, R-3, R-4 and MHP or abutting hospital, library or school; all others 65 dba

Table 15: Ottawa County Wind Ordinances for Low Impact or Small Systems

Government; Type of Wind Turbine	Conditionally Permitted?	Size Limit (Max.)	Height Limit (Max.)	Height Limit (Min.)	Fall Zone/Setback	Noise Restriction (Max.)
Allen Township Low impact	Permitted in A; conditional in R-1, C-1,C-2	≤100 kW	150 ft		1.25 x height to property line, off-site residence, right-of-way	60 dBA
Allen Township Small Farm (2 or	Conditional in A	< 5 MW			Submitted with conditional use	

more turbines)					permit	
Benton Township Low Impact		≤ 100 kW			1.25 x height away from property line, right-of-way; can get fall zone easement next to agric	60 dBA
Benton Township Small Wind Farm	Yes	< 5 MW			1.25 x height away from off-site residence, public road, school, church, building of public gathering; can be waived; need liability insurance policy	60 dBA
Catawba Island Township	Permitted use or Conditional in A and R-1; each with specific location parameters	<100 kW	150 ft		1.25 x height from property line, off-site residence, right-of-way	60 dBA
Clay Township Low Impact		≤ 100 kW			1.25 x height away from property line, right-of-way; can get fall zone easement next to agric	60 dBA
Clay Township Small Wind Farm	Yes	< 5 MW			1.25 x height away from off-site residence, public road, school, church, building of public gathering; can be waived; need liability insurance policy	60 dBA
Danbury Township Low Impact	Permitted in A; conditional in R-1, C-1, C-2	≤ 100 kW	150 ft		1.25 x height away from property line, off-site residence, right-of-way	60 dBA
Danbury Township Small Wind Farm	Conditional in A, M-2; 2 or more turbines	< 5 MW			1.25 x height away from property line, off-site residence, right-of-way, school, church, building for public gathering	60 dBA
Harris Township Low Impact	Yes	≤ 100 kW			1.25 x height from property line, residence, right-of-way	
Harris Township Small Wind Farm	Yes	< 5 MW			1.25 x height from property line, residence, right-of-way, school, church, building for public gathering	Anticipate number provided to Board for review
Oak Harbor (village)	Yes, in all zoning, commercial wind in Heavy Industry only (more than one turbine)	≤ 100 kW		Blade 30 feet about foundation or any structure within 30 feet	1.3 x height from property line, right-of-way, utility corridor and overhead utilities; none in front yard	45 dBA measured from 100 feet
Portage Township Low Impact	Uses Permitted for all districts	≤ 100 kW	150 ft		1.1 x height away from property line and right-of-way	Shouldn't interfere with normal conversation at property line
Put-in-Bay Township Low impact	Yes, in district A	<100 kW	150 ft		1.25 x height away from property line, off-site residence, right-of-way	60 dBA

Salem Township Low Impact	Yes, Residential, agricultural	≤ 100 kW	150 ft		1.25 x height away from property line, off-site residence, right-of-way	60 dBA
Salem Township Small Wind Farm	Yes, agricultural; approved by US F & WS and ODNR	< 5 MW			1.5 x height away from property line, off-site residence, right-of-way; school, church or public gathering building	60 dBA

Table 16: Ottawa County Wind Ordinances for High Impact or Commercial Systems

Government; Type of Wind Turbine	Conditionally Permitted?	Size Limit (Max.)	Height Limit (Max.)	Height Limit (Min.)	Fall Zone/Setback	Noise Restriction (Max.)
Allen Township High Impact	Permitted in M-2, Conditional in M-1	>100 kW			1.5 x height to property line, off-site residence, right-of-way	60 dBA
Allen Township Small Farm (2 or more turbines)	Conditional in A	< 5 MW			Submitted with conditional use permit	
Benton Township High Impact		>100 kW			1.5 x height from property line and right-of-way, can get fall zone easement next to agric.	60 dBA
Benton Township Small Wind Farm	Yes	< 5 MW			1.25 x height away from off-site residence, public road, school, church, building of public gathering; can be waived; need liability insurance policy	60 dBA
Catawba Island Township	Permitted use or Conditional in A and R-1; each with specific location parameters	<100 kW	150 ft		1.25 x height from property line, off-site residence, right-of-way	60 dBA
Clay Township High Impact		>100 kW			1.5 x height from property line and right-of-way, can get fall zone easement next to agric.	60 dBA
Clay Township Small Wind Farm	Yes	< 5 MW			1.25 x height away from off-site residence, public road, school, church, building of public gathering; can be waived; need liability insurance policy	60 dBA
Danbury Township High Impact	Conditional in M-1; permitted in M-2	>100 kW			1.5 x height away from property line, off-site residence, right-of-way	60 dBA
Danbury Township Small Wind Farm	Conditional in A, M-2; 2 or more turbines	< 5 MW			1.25 x height away from property line, off-site residence, right-of-way, school, church, building for public gathering	60 dBA

Harris Township High Impact	Yes; Location pre-approved by Fish & Wildlife and ODNR	>100 kW			1.5 x height from property line, residence, right-of-way	
Harris Township Small Wind Farm	Yes	< 5 MW			1.25 x height from property line, residence, right-of-way, school, church, building for public gathering	Anticipate number provided to Board for review
Oak Harbor (village)	Yes, in all zoning, commercial wind in Heavy Industry only (more than one turbine)	≤ 100 kW		Blade 30 feet about foundation or any structure within 30 feet	1.3 x height from property line, right-of-way, utility corridor and overhead utilities; none in front yard	45 dBA measured from 100 feet
Portage Township High Impact	Uses permitted in M-1, M-2	>100 kW			1.25 x height from property line, right-of-way	
Put-in-Bay Township High Impact	Yes, in district A; approved by US F & WS and ODNR	>100 kW			1.5 x of height away from property line, off-site residence, right-of-way	
Salem Township High Impact	approved by US F & WS and ODNR; commercial, manufacturing, agricultural	>100 kW			1.5 x height away from property line, off-site residence, right-of-way	60 dBA
Salem Township Small Wind Farm	Yes, agricultural; approved by US F & WS and ODNR	< 5 MW			1.5 x height away from property line, off-site residence, right-of-way; school, church or public gathering building	60 dBA

Table 17: Local Governments that do not have ordinances regulating wind turbines

County	Government
Erie	Berlin Heights Township
Erie	Kelley's Island Village
Erie	Milan Village
Lorain	Amherst City
Lorain	Brighton Township
Lorain	Camden Township
Lorain	Eaton Township
Lorain	Grafton Township
Lorain	Huntington Township
Lorain	New Russia Township
Lorain	Wellington Township
Lorain	Grafton Village
Lorain	Kipton Village
Lorain	Rochester Township
Lorain	Rochester Village
Lorain	South Village
Lorain	Oberlin City
Lucas	Maumee City
Lucas	Oregon City
Lucas	Sylvania City
Lucas	Holland Village
Lucas	Ottawa Hills Village
Ottawa	Port Clinton City
Ottawa	Elmore Village
Ottawa	Marblehead Village
Ottawa	Put In Bay Village

Ottawa	Rocky Ridge Village

Table 18: Erie County Solar Ordinances

Government	Conditionally Permitted?	Notes
Sandusky City	No	Must comply with chapter 23 of Ohio Residential Code

Table 19: Lorain County Solar Ordinances

Government	Conditionally Permitted?	Size Limit; Mounted on Existing Structure (Max.)	Size Limit; Ground Mount (Max.)	Setback
Penfield Township	Yes	35 feet	8 feet	Front Yard - 70 feet from road right-of-way; Side Yard - 15 feet from property line; Rear Yard - 15 feet from property line
Wellington Village	Moratorium on construction to draft new zoning legislation	N/A	N/A	N/A
Lagrange Village	Yes	No solar panel shall exceed the height of the roofline on a pitched roof; Solar panels installed on a flat roof shall be installed at an angle that is not more than three feet above the roof line, provided that the height of the solar panel not exceed 35 feet in Residential, Business, and Industrial Districts; and 40 feet in Institutional Development and Transitional Districts	15 feet; Ground arrays permitted solely for the purpose of heating swimming pools; not permitted in front yards; must be oriented so glare is directed away from adjoining property; shall not exceed 9 square feet in size	Ground arrays are subject to the setback distances prescribed for the residential zoning district in which the array is constructed

Table 20: Lucas County Solar Ordinances

Government	Conditionally Permitted?	Notes
Toledo City	Special Use approval is required when the solar system is a stand-alone facility; not permitted in historic district unless approved by the Historic District Commission	Permitted when attached to building and not visible from street or when visible they must be parallel to roof slope and project no more than 12 inches

Table 21: Local Governments that do not have Ordinances Regulating Solar Energy Systems

County	Government
Erie	Berlin Township
Erie	Berlin Heights Township
Erie	Florence Township
Erie	Huron City
Erie	Huron Township
Erie	Kelley's Island Village
Erie	Margaretta Township

Erie	Milan Township
Erie	Milan Village
Erie	Oxford Township
Erie	Perkins Township
Erie	Vermilion City
Erie	Vermilion Township
Lorain	Amherst City
Lorain	Amherst Township
Lorain	Brighton Township
Lorain	Brownhelm Township
Lorain	Camden Township
Lorain	Carlisle Township
Lorain	Eaton Township
Lorain	Grafton Township
Lorain	Grafton Village
Lorain	Huntington Township
Lorain	Kipton Village
Lorain	La Grange Township
Lorain	New Russia Township
Lorain	Oberlin City
Lorain	Pittsfield Township
Lorain	Rochester Village
Lorain	South Amherst Village
Lorain	Wellington Township
Lucas	Harding Township
Lucas	Holland Village
Lucas	Maumee City
Lucas	Monclova Township
Lucas	Oregon City
Lucas	Ottawa Hills Village
Lucas	Richfield Township
Lucas	Spencer Township
Lucas	Springfield Township
Lucas	Sylvania City
Lucas	Sylvania Township
Lucas	Washington Township
Ottawa	Allen Township
Ottawa	Bay Township
Ottawa	Benton Township
Ottawa	Carroll Township
Ottawa	Catawba Island Township
Ottawa	Clay Township
Ottawa	Danbury Township
Ottawa	Elmore Village
Ottawa	Erie Township
Ottawa	Genoa Village
Ottawa	Harris Township
Ottawa	Marblehead Village
Ottawa	Oak Harbor Village
Ottawa	Port Clinton City
Ottawa	Portage Township
Ottawa	Put-in-Bay Township
Ottawa	Put-in-Bay Village
Ottawa	Rocky Ridge Village
Ottawa	Salem Township

Table 22: Local Governments that are not zoned

County	Government
Ottawa	Bay Township
Ottawa	Carroll Township
Ottawa	Erie Township

Table 23: Local Governments that did not Respond to Inquiries for Zoning Information

County	Government
Erie	Groton Township
Erie	Bay View Village
Erie	Castalia Village
Lorain	Henrietta Township
Lorain	Rochester Township
Lucas	Jerusalem Township
Lucas	Berkey Village
Lucas	Harbor View Village
Ottawa	Clay Center Village

Appendix C: Utility Interconnection Agreements

Firelands Rural Electric (<25 kW)

Renewable Energy Program

Small Power Production Facilities Up to 25 KW

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Presented to BOT on
March 13, 2006

APPLICATION FOR INTERCONNECTION AND PARALLEL OPERATION

Return Completed Application to:

Firelands Electric Cooperative
Attention: Engineering Department
P.O. Box 32, New London, OH 44851

Customer's Name:_____

Address:_____

Contact Person:_____

Telephone Number:_____

Service Point Address:_____

Information Prepared and Submitted By:_____

(Name and Address)_____

The following information shall be supplied by the Customer or Customer's designated representative. All applicable items must be accurately completed in order that the Customer's generating facilities may be effectively evaluated for interconnection with the Cooperative's Distribution System.

GENERATOR

Number of Units:_____

Manufacturer:_____

Type (Synchronous, Induction, or Inverter):_____

Fuel Source Type (Solar, Natural Gas, Wind, etc.):_____

Kilowatt Rating (95 F at location)_____

Kilovolt-Ampere Rating (95 F at location):_____

Power Factor:_____

Voltage Rating:_____

Ampere Rating:_____

Number of Phases:_____

Frequency:_____

Do you plan to export power: _____ Yes _____ No

If Yes, maximum amount expected:_____

If Yes, do you expect the amount of exported energy to exceed your requirements for electric energy at the service address on an annual basis? _____ Yes _____ No

Estimated annual requirements for electric energy at the service address: _____ Kilowatt-hours

Expected Energizing and Start-up Date_____

Normal Operation of Interconnection: (examples: provide power to meet base load, demand management, standby, back-up, other) (please describe)_____

One-line diagram attached: _____ Yes

Have testing results been supplied to the Cooperative documenting conformance with the Cooperative's technical requirements: _____ Yes [Note: Requires a Yes for complete Application.]

Have all necessary government permits and approvals been obtained for the project prior to this application: _____ Yes [Note: Requires a Yes for an Application to be considered complete.]

Has the generator been certified as a qualifying cogeneration or small power production facility under the Public Utility Regulatory Policies Act of 1978: _____ Yes [Note: Requires a Yes for an Application to be considered complete.]

Have the generator manufacturer machine characteristics been supplied to the Company:

_____ Yes [Note: Requires a Yes for complete Application.]

Layout sketch showing lockable, "visible" disconnect device: ____ Yes

Application fee:_____Yes $_____

Checks are payable to:_____ at _____

DATE: By: _____
(Signature)

Name: _____

Title: _____

FIRELANDS ELECTRIC COOPERATIVE, INC.
NEW LONDON, OHIO

Technical Guidelines for Interconnection and Parallel Operation

APPLICABILITY

These rules apply to interconnection and parallel operation of DG (Distributed Generation) equipment that, in sum, is rated less than 1 megawatt on radially operated Cooperative distribution lines up to 12.47 kV three phase (7.2 kV single phase). Interconnections to higher voltage lines will be made at the discretion of the Cooperative.

1.0 DEFINITIONS

Distributed Generation (DG) Facility – Includes any qualifying cogeneration or small power production facility meeting all definitional requirements under the Public Utility Regulatory Policies Act of 1978, as amended, and all governmental regulations lawfully promulgated thereunder.

Flicker – A variation of input voltage sufficient in magnitude and duration to allow visual observation of a change in electric lighting source intensity, as defined in IEEE Standard 141-1993. See Also Exhibit 1, attached, specifically the curve "Border Line of Visibility".

Facilities Study – An engineering study conducted to determine the modifications to the existing cooperative system that will be needed to accommodate connection and safe operation of the DG Facility

Harmonic Distortion – Distortion of the normal sine waveform; typically caused by nonlinear loads or by inverters attached to the system on customer premises.

Interconnection Agreement – A legal contract for the connection of the DG Facility to the Cooperative's lines, specifying the location, size, cost, manner of payment, terms of operation, and respective responsibilities of the Cooperative and the DG Facility owner.

Point of Common Coupling – The point at which a DG Facility is connected to the Cooperative's electric distribution system.

Radially Operated System – An electric distribution system that is normally operated with only one supplying line connected to a load at any one time.

Single Phasing Condition – Occurs when electric flow through one phase of a three phase supply line or device is interrupted.

Short Circuit Contribution – The result, expressed as a percentage, of dividing the maximum short circuit contribution of the DG Facility (or Facilities) by the short circuit contribution available from the Cooperative's system, without the DG Facility (or Facilities).

Supplemental Review - Review of functional technical requirements to determine acceptability of equipment to be used to connect and safely operate the DG Facility on the Cooperative's lines

System Impact Study – An engineering study to assess the ability of the existing cooperative system to accommodate connection and safe operation of the DG Facility.

Unintentional Island - An unplanned condition where a portion of the Cooperative's electric distribution system that is physically disconnected from the Cooperative's power supply remains energized as a result of power supplied by one or more DG facilities.

2.0 CUSTOMER DESIGN REQUIREMENTS

For an interconnection to be safe to Cooperative employees and equipment and to other customers, the following minimum conditions are required to be met by DG Facilities. At the discretion of the Cooperative, additional conditions may be required to be met:

2.1 DG Facilities must meet all applicable national, state, and local construction, operation and maintenance related safety codes, such as National Electrical Code (NEC), National Electrical Safety Code (NESC), and Occupational Safety and Health Administration (OSHA) requirements.

2.2 DG Facility owner must provide the Cooperative with a one-line diagram showing the configuration of the proposed DG system, including the protection and controls, disconnection devices, nameplate rating of each device, power factor rating, transformer connections, and other information deemed relevant by the DG owner and/or the Cooperative. If the proposed DG system does not pass the screening process for simplified interconnection, Exhibit 2 attached hereto, additional information may be necessary from the DG Facility owner, and Cooperative system changes may be required.

2.3 DG Equipment must be equipped with adequate protection and control to trip[1] the unit off line during abnormal[2] system conditions, according to the following requirements:

2.3.1 Undervoltage or overvoltage within the trip time indicated below. By agreement of both the DG owner and the Cooperative, different settings maybe used for the under voltage and over voltage trip levels or time delays.

V=Nominal SystemVoltage	Maximum Trip Time
V<50%	10 cycles
50%≤V<88%	120 cycles
110%<V<120%	60 cycles
V≥120%	6 cycles

2.3.2 For three phase generation, loss of balanced three-phase voltage or a single phasing condition within the trip times indicated in 2.3.1 when voltage on at least one phase reaches the abnormal voltage levels.

2.3.3 Underfrequency or overfrequency: All DG Facilities shall follow the associated Cooperative distribution line frequency within the range

[1] To trip is to automatically (without human intervention required) open the appropriate disconnection device to separate the DG equipment from the power system.

[2] Abnormal system conditions include faults due to adverse weather conditions including but not limited to, floods, lightning, vandalism, and other acts that are not under the control of the Cooperative. This may also result from improper design and operation of customer facilities resulting from non-compliance with accepted industry practices.

59.3 Hz to 60.5 Hz. DG Facilities rated at less than 10 kW shall disconnect from the Cooperative within 10 cycles if the frequency goes outside this range. A DG rated more than 10kW shall (1) disconnect from the Cooperative within 10 cycles if the frequency exceeds 60.5 Hz, and (2) be capable of time delayed disconnection for frequencies in the range 59.3 Hz to 57 Hz. By agreement of both the DG operator and the Cooperative, different settings maybe used for the under frequency and over frequency trip levels or time delays.

2.4 DG equipment requires the following additional protection to avoid damage to the Cooperative's system during normal, as well as abnormal system conditions.

2.4.1 Synchronizing controls to insure a safe interconnection with the Cooperative's distribution system. The DG equipment must be capable of interconnection with minimum voltage and current disturbances. Synchronous generator installations, as well as other types of installations, must meet the following: slip frequency less than 0.2 Hz, voltage deviation less than $\pm$ 10%, phase angle deviation less than $\pm$ 10 degrees, breaker closure time compensation (not needed for automatic synchronizer that can control machine speed).

2.4.2 A disconnect switch to isolate the DG equipment for purposes of safety during maintenance and during emergency conditions. The Cooperative may require a disconnect device to be provided, installed by, and paid for by the customer, which is accessible to and lockable by Cooperative personnel, either at the primary voltage level, which may include load-break cutouts, switches and elbows, or on the secondary voltage level, which may include a secondary breaker or switch. The switch must be clearly labeled as a DG disconnect switch.

2.5 DG equipment must have adequate fault interruption and withstand capacity, and adequate continuous current and voltage rating to operate properly[3] with the Cooperative's system. A three-phase device shall interrupt all three phases simultaneously. The tripping control of the circuit interrupting device shall be powered independently of the utility AC source, for example by a battery or stored energy device, in order to permit operation upon loss of the Cooperative distribution system connection.

2.6 Test results shall be supplied by the manufacturer or independent testing lab that verify, to the satisfaction of the Cooperative, compliance with the following requirements contained in this document[4]:

2.6.1 Over/Under Voltage Trip Settings (ref. 2.3.1)
2.6.2 Over/Under Frequency Trip Settings (ref 2.3.3)
2.6.3 Synchronization (ref 2.4.1)

[3] Properly, in this context, means within the acceptable Cooperative or industry established practices.
[4] For photovoltaic systems, a certification that the testing requirements of UL 1741 have been met may be used in place of these tests.

2.6.4 Harmonic Limits (tested at 25%[5] of full load rating or at a level as close to the minimum level of rated output the unit is designed to operate as practical and at a level as close to 100% of full load rating as practical) (ref 2.7)

2.6.5 DC Current Injection Limits (Inverters) (ref 2.8)

2.6.6 Anti-Islanding (Inverters) (2.13)

2.6.7 Prevent Connection or Reconnection to De-energized System (ref 2.14)

If test results are acceptable to the Cooperative and if requested by a manufacturer, the Cooperative may supply a letter indicating the protective and control functions for a specific DG Facility model are approved for interconnection with the Cooperative's distribution system, subject to the other requirements in this document. The Cooperative reserves the right to review the suitability of previously approved protective and control functions.

The DG Facility owner shall have the DG Facility inspected by the Cooperative and any required local inspectors to (i) verify correct protective settings and connections of the DG Facility to the Cooperative system prior to the first parallel operation, and (ii) shall have testing performed to the satisfaction of the Cooperative to verify proper operation of the DG Facility.

2.7 Harmonics and Flicker: The DG equipment shall not be a source of excessive harmonic voltage and current distortion and/or voltage flicker. Limits for harmonic distortion (including inductive telephone influence factors) will be as published in the latest issues of ANSI/IEEE 519, "Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems." Flicker occurring at the point of compliance shall remain below the Border Line of Visibility curve on the IEEE/GE curve for fluctuations less than 1 per second or greater than 10 per second. However, in the range of 1 to 10 fluctuations per second, voltage flicker shall remain below 0.4%. Refer to Exhibit 1. When there is reasonable cause for concern due to the nature of the generation and its location, the Cooperative may require the installation of a monitoring system to permit ongoing assessment of compliance with these criteria. The monitoring system, if required, will be installed at the DG owner's expense. Situations where high harmonic voltages and/or currents originate from the distribution system are to be addressed in the Interconnection Agreement.

2.8 DC Current Injection from inverters shall be maintained at or below 0.5% of full rated inverter output current into the point of common coupling.

2.9 The Distributed Generation's generated voltage shall follow, not attempt to oppose or regulate, changes in the prevailing voltage level of the Cooperative at the point of common coupling, unless otherwise agreed to by the operators of the Distributed Generation and the Cooperative. Distributed Generation

[5] If the device is not designed to operate at this level, then the test should be at the lowest level at which it is designed to operate.

installed on the downstream (load) side of the Cooperative's voltage regulators shall not degrade the voltage regulation provided to the downstream customers of the Cooperative to service voltages outside the limits of ANSI 84.1, Range A

2.10 System Grounding: The DG Facility shall be grounded in accordance with applicable codes. The interconnection of the DG equipment with the Cooperative's system shall be compatible with the neutral grounding method in use on the Cooperative's system. For interconnections through a transformer to Cooperative system primary feeders of multi-grounded, four-wire construction, or to tap lines of such systems, the maximum unfaulted phase (line-to-ground) voltages on the Cooperative system primary feeder during single line-to-ground fault conditions with the Cooperative system source disconnected, shall not exceed those voltages which would occur during the fault with the Cooperative system source connected and no DG Facilities connected.

2.11 System Protection: The DG owner is responsible for providing adequate protection to Cooperative facilities for conditions arising from the operation of generation under all Cooperative distribution system operating conditions. The owner is also responsible for providing adequate protection to their facility under any Cooperative distribution system operating condition whether or not their DG is in operation. Conditions may include but are not limited to:

1. Loss of a single phase of supply,
2. Distribution system faults,
3. Equipment failures,
4. Abnormal voltage or frequency,
5. Lightning and switching surges,
6. Excessive harmonic voltages,
7. Excessive negative sequence voltages,
8. Separation from supply,
9. Synchronizing generation,
10. Re-synchronizing the Owner's generation after electric restoration of the supply.

2.12 Feeder Protective Coordination. In the case of a Cooperative protective function initiating a trip of a Cooperative protective device, the DG Facility protection and controls shall be designed to coordinate with the Cooperative protective device, and shall isolate the DG Facility from the Cooperative's lines.

2.13 Unintentional islanding: For an unintentional island in which the DG and a portion of the Cooperative's system remain energized through the point of common coupling, the DG shall cease to energize the Cooperative system.

2.14 The DG shall be designed to prevent the DG facility from being connected to a de-energized Cooperative system. The customer should not reconnect the DG facility to the Cooperative's system after a trip from a system protection device until the Cooperative's system is re-energized for a minimum of five minutes.

2.15 If the customer connects a backup generator directly to the customer's wiring to serve any load on the customer's site, he shall utilize a double-throw transfer switch in order to ensure that no power is fed back onto the Cooperative's distribution system. *This is a critical safety requirement.*

2.16 Voltage deviation from normal Cooperative line voltage at the point of common coupling caused by the DG facility shall not under any condition exceed 3%, calculated by dividing the maximum deviation from average line voltage by the average line voltage, with the result multiplied by 100.

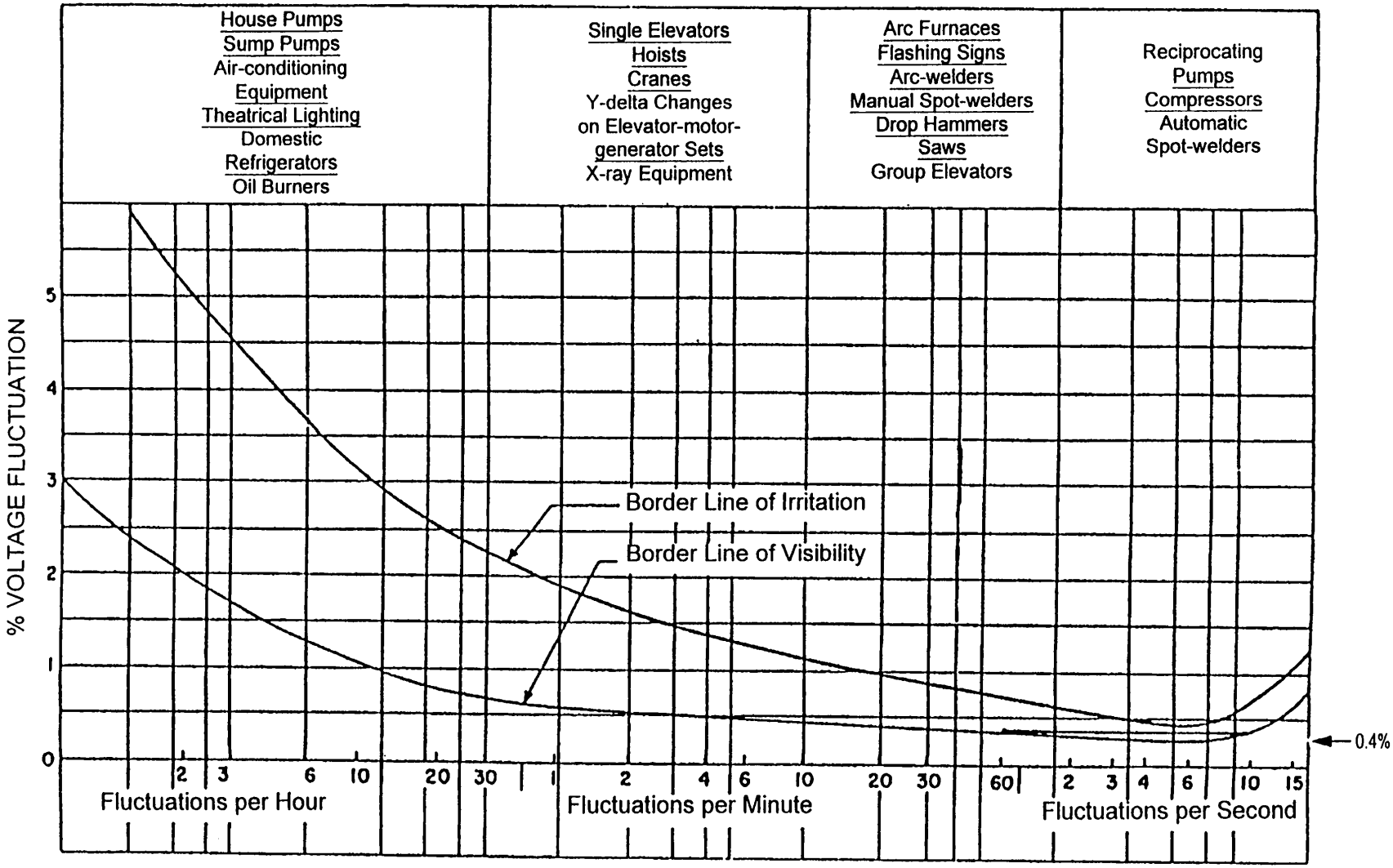
3.0 CUSTOMER OPERATING PROCEDURES

3.1 If high-voltage, low-voltage, or voltage flicker complaints arise from other customers due to the operation of customer DG, the customer may be required to disconnect his or her generation equipment from the Cooperative's system until the problem has been resolved.

3.2 The operation of the DG equipment must not result in harmonic currents or voltages at the point of common coupling that will interfere with the Cooperative's metering accuracy and/or proper operation of facilities and/or with the loads of other customers. Such adverse effects may include, but are not limited to heating of wiring and equipment, over voltage, communication interference, etc. If such a condition is found, the Cooperative may require the DG Facility to be disconnected from the Cooperative lines until the problem is resolved.

3.3 The DG Facility owner must discontinue parallel operation when requested by the Cooperative after prior notice. If the Cooperative has notified the DG Facility owner that an emergency situation exists, the DG Facility owner shall immediately discontinue parallel operation of the DG Facility with the Cooperative's lines.

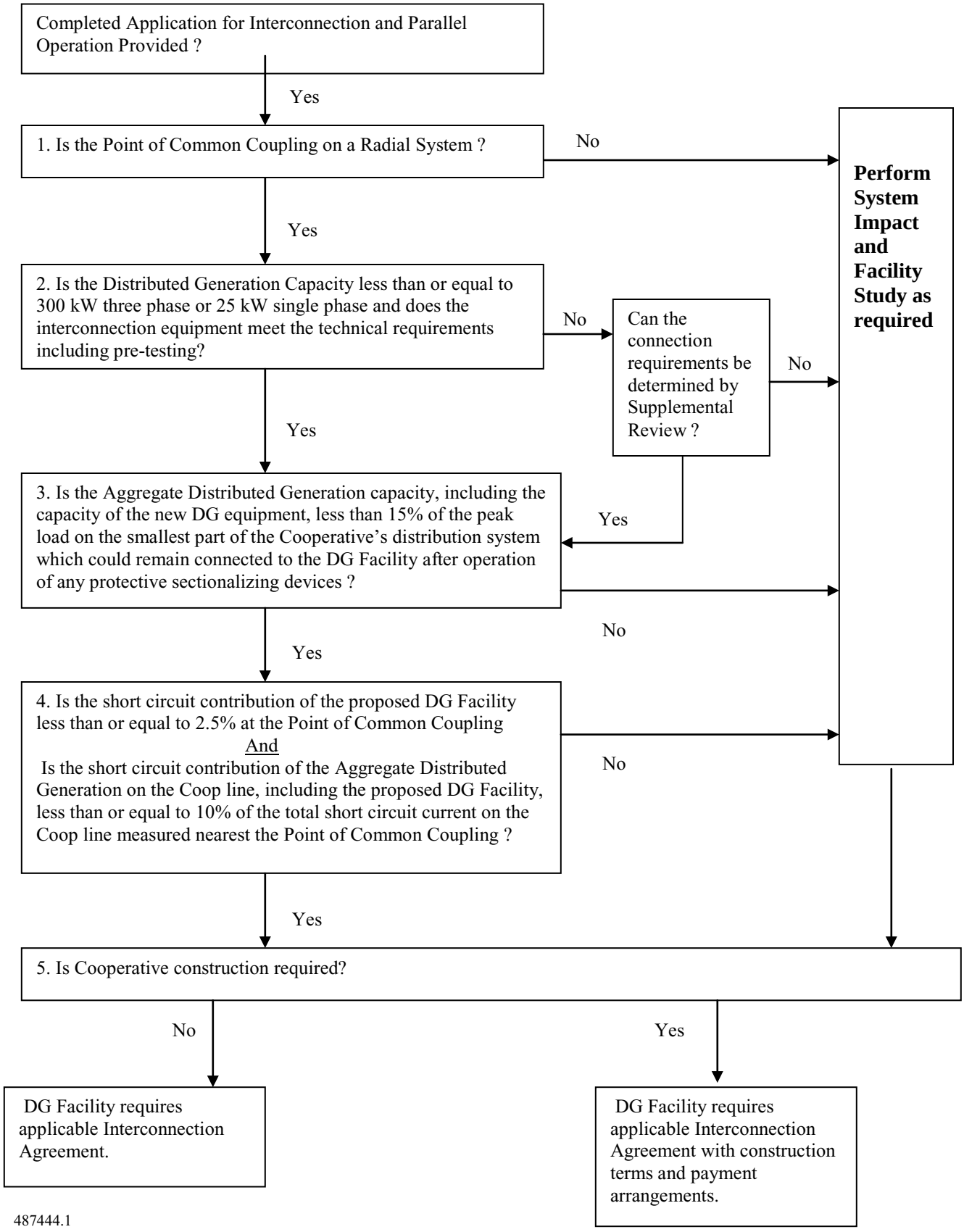
Exhibit 1



Composite curve of voltage flicker studies by General Electric Company, *General Electric Review*, August 1925; Kansas City Power & Light Company, *Electrical World*, May 19, 1934; T&D Committee, EEI, October 24, 1934, Chicago; Detroit Edison Company; West Pennsylvania Power Company; Public Service Company of Northern Illinois.

Relations of Voltage Fluctuations to Frequency of Their Occurrence (Incandescent Lamps)

INTERCONNECTION REQUEST SCREENING PROCESS



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AGREEMENT FOR INTERCONNECTION AND PARALLEL OPERATION OF QUALIFYING COGENERATION OR SMALL POWER PRODUCTION FACILITIES UP TO 25 KW

This Agreement ("Agreement") dated as of _____, by and between Firelands Electric Cooperative, Inc., an Ohio nonprofit corporation (the "Power Company"), and _____ (the "Consumer" together with the Power Company, individually, a "Party" and, collectively, the "Parties");

WITNESSETH:

WHEREAS, the Consumer has or will install on the Premises certain Consumer-owned electric generating facilities up to 25 kW in the aggregate, which electric generating facilities are more particularly described in Exhibit E attached hereto; and

WHEREAS, the Electric Generating Facility is a certified qualifying cogeneration or small power production facility under PURPA; and

WHEREAS, the Consumer desires to interconnect the Electric Generating Facility to the Power Company's electric distribution system;

NOW, THEREFORE, in consideration of the mutual promises, covenants and agreements herein contained, the Parties, intending to be legally bound, hereby agree as follows:

ARTICLE 1 -- DEFINITIONS

Capitalized terms used but not defined herein shall have the meanings assigned to such terms in the Agreement for Electric Service. Whenever used in this Agreement, the following terms shall have the following meanings:

"Agreement for Electric Service" shall mean the Agreement for Electric Service of even date herewith between Power Company and the Consumer.

"Buckeye" shall mean Buckeye Power, Inc. and its successors and assigns.

"Electric Generating Facility" shall mean the Consumer's electric generating units identified in Exhibit E hereof, the output of which shall not exceed 25 kW in the aggregate and is not reasonably anticipated to exceed the annual electric energy requirements of Consumer's electric consuming facilities located on the Premises.

"Emergency" shall mean a condition or situation (i) that in the judgment of Power Company or Consumer is imminently likely to endanger life or property, (ii) that in the sole judgment of Power Company is imminently likely to adversely affect or impair the Power Company Distribution System or the electrical or transmission systems of others to which the Power Company Distribution System is directly or indirectly connected, including, without

limitation, the transmission system of Transmission Owner, or (iii) that in the sole judgment of the Consumer is imminently likely to adversely affect or impair the Electric Generating Facility.

"Good Utility Practice" shall mean any of the practices, methods and acts engaged in or approved by a significant proportion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at the lowest reasonable cost consistent with reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method or act to the exclusion of all others, but rather to be a spectrum of acceptable practices, methods or acts.

"Interconnection Facilities" shall mean all facilities presently in place or presently proposed to be installed, as identified in Exhibit A hereof, or facilities which are later installed, in order to interconnect the Electric Generating Facility to the Power Company Distribution System, including System Protection Facilities.

"Interconnection Service" shall mean the services provided by the Power Company to interconnect the Electric Generating Facility with the Power Company Distribution System pursuant to the terms of this Agreement.

"Net Metering Equipment" shall mean the single bi-directional meter or pair of meters currently installed at the Point of Interconnection or to be installed at the Point of Interconnection as described in Exhibit B hereof.

"NERC" shall mean the North American Electric Reliability Council, and any successor thereto.

"Point of Interconnection" shall mean the point or points, shown in Exhibit A hereof, where the Consumer's Interconnection Facilities interconnect with the Power Company Distribution System.

"Power Company Distribution System" shall mean all electric distribution facilities owned or controlled by Power Company on Power Company's side of the Point of Interconnection, including, without limitation, Power Company's Interconnection Facilities.

"ReliabilityFirst" shall mean ReliabilityFirst Corporation, one of the regional reliability councils of NERC formed to promote reliability and adequacy of bulk power supply of the electric utility systems in North America, and any successor thereto.

"System Protection Facilities" shall mean the equipment required to protect (a) the Power Company Distribution System, the systems of others directly or indirectly connected to the Power Company Distribution System, including, without limitation, the transmission system of Transmission Owner, and Power Company's customers from faults or other electrical disturbances occurring at the Electric Generating Facility or otherwise on Consumer's side of the Point of Interconnection, and (b) the Electric Generating Facility from faults or other electrical

disturbances occurring on the Power Company Distribution System or on the systems of others to which the Power Company Distribution System is directly or indirectly connected, including, without limitation, the transmission system of Transmission Owner.

"Transmission Owner" shall mean _____, owning transmission facilities to which the Power Company Distribution System is interconnected, and its successors and assigns.

"Transmission Provider" shall mean _____, providing transmission service through facilities owned by Transmission Owner, and its successors and assigns.

ARTICLE 2 -- INTERCONNECTION SERVICE

Subject to the terms and conditions of the Agreement for Electric Service and this Agreement, Power Company shall provide Consumer with Interconnection Service for the Electric Generating Facility for the term of the Agreement for Electric Service.

ARTICLE 3 -- OPERATION AND MAINTENANCE

3.1 Operation, Maintenance and Control of the Electric Generating Facility. The Consumer shall own, operate, maintain and control the Electric Generating Facility and Consumer's Interconnection Facilities (a) in a safe and reliable manner, (b) in accordance with Good Utility Practice, (c) in accordance with applicable operational and reliability criteria, protocols, and directives, including those of NERC, ReliabilityFirst, the Power Company, Transmission Owner and Transmission Provider (including, without limitation, those requirements of Power Company set forth in Exhibit C hereof and those requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof), and (d) in accordance with the provisions of this Agreement. Consumer may operate the Electric Generating Facility in parallel and in synchronization with the electric power and energy provided by Power Company to Consumer pursuant to the Agreement for Electric Service, as an auxiliary or supplement to such electric power and energy, and may use the output of the Electric Generating Facility to meet the requirements of Consumer's electric consuming facilities located on the Premises. Any output of the Electric Generating Facility in excess of the requirements of Consumer's electric consuming facilities located on the Premises shall be transferred to the Power Company and credited against the Consumer's bill for electric service in accordance with the net metering arrangements described in this Agreement, the Agreement for Electric Service, and the Net Metering Rate Schedule attached to the Agreement for Electric Service.

3.2 Protection and System Quality. Consumer shall, at its expense, provide, install, own, operate and maintain System Protection Facilities, including such protective and regulating devices as are required by NERC, ReliabilityFirst, the Power Company, Transmission Owner or Transmission Provider, or by order, rule or regulation of any duly-constituted regulatory authority having jurisdiction, or as are otherwise required by Good Utility Practice in order to protect persons and property and to minimize deleterious effects to the Power Company Distribution System and the transmission system of Transmission Owner. Any such protective or regulating devices that may be required on Power Company's or Transmission Owner's facilities in connection with the operation of the Electric Generating Facility shall be installed by Power

Company or Transmission Owner, as the case may be, at Consumer's expense. Power Company reserves the right to modify or expand its requirements for protective devices in conformance with Good Utility Practice, as long as such modifications or expansions of requirements are compatible with the design of the Electric Generating Facility and the Interconnection Facilities.

3.3 Inspection. Power Company shall have the right, but shall have no obligation or responsibility to (a) observe Consumer's tests and inspections of any of Consumer's protective equipment, (b) review the settings of Consumer's protective equipment, and (c) review Consumer's maintenance records relative to the Electric Generating Facility and Consumer's protective equipment. The foregoing rights may be exercised by Power Company from time to time as deemed necessary by the Power Company upon reasonable notice to Consumer. However, the exercise or non-exercise by Power Company of any of the foregoing rights of observation, review or inspection shall be construed neither as an endorsement or confirmation of any aspect, feature, element, or condition of the Electric Generating Facility or Consumer's protective equipment or the operation thereof, nor as a warranty as to the fitness, safety, desirability, or reliability of same.

3.4 Disconnection. Upon termination of the Agreement for Electric Service by its terms, Consumer shall disconnect the Electric Generating Facility from the Power Company Distribution System. Power Company shall have the right to disconnect, or to require the Consumer to disconnect, the Electric Generating Facility immediately and without prior notice if, in the Power Company's sole opinion, an Emergency exists and immediate disconnection is necessary to protect persons or property from injury or damage. Power Company shall have the right to disconnect, or to require the Consumer to disconnect, the Electric Generating Facility with no less than seven days prior notice if, in the Power Company's sole opinion, such disconnection is required in order for the Power Company to conduct maintenance, repairs or replacements of its facilities or the Power Company Distribution System. Consumer shall disconnect the Electric Generating Facility immediately if an Emergency exists and immediate disconnection is necessary to protect persons or property from injury or damage.

ARTICLE 4 -- EMERGENCIES

The Consumer agrees to comply with NERC, ReliabilityFirst, Power Company, Transmission Owner and Transmission Provider Emergency procedures, as applicable, with respect to Emergencies (including, without limitation, those of requirements of the Power Company set forth in Exhibit C hereof and those requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof). The Consumer shall provide the Power Company with oral notification that is prompt under the circumstances of an Emergency which may reasonably be expected to affect the Power Company Distribution System or the transmission system of Transmission Owner, to the extent the Consumer is aware of the Emergency. To the extent the Consumer is aware of the facts of the Emergency, such notification shall describe the Emergency, the extent of the damage or deficiency, its anticipated duration, and the corrective action taken or to be taken, and shall be followed as soon as practicable with written notice. In the event of an Emergency, the party becoming aware of the Emergency may, in accordance with Good Utility Practice and using its reasonable judgment,

take such action as is reasonable and necessary to prevent, avoid, or mitigate injury, danger, damage or loss.

ARTICLE 5 – MODIFICATIONS AND CONSTRUCTION

5.1 Modifications. Either party may undertake modifications to its facilities; provided, that Consumer shall not increase the output of the Electric Generating Facility or make other material change or modification to the configuration or operation of the Electric Generating Facility without the prior written consent of Power Company and Buckeye. In the event that the Consumer plans to undertake a modification that reasonably may be expected to impact the Power Company's facilities, the Consumer shall provide the Power Company and Buckeye with sufficient information regarding such modification so that the Power Company and Buckeye can evaluate the potential impact of such modification prior to commencement of the work.

5.2 Construction.

5.2.1 Land Rights. Consumer shall furnish at no cost to Power Company any necessary access, easements, licenses, and/or rights of way upon, over, under, and across lands owned or controlled by Consumer and/or its affiliated interests for the construction, operation and maintenance by Power Company of necessary lines, substations, and other equipment to accomplish interconnection of the Electric Generating Facility with the Power Company Distribution System under this Agreement and the provision of electric service to the Consumer under the Agreement for Electric Service, and shall, at all reasonable times, give the Power Company, and its agents, free access to such lines, substations, and equipment. An accessible, protected and satisfactory site selected upon mutual agreement by the Parties and located on the Consumer's premises shall be provided by and at the Consumer's expense for installation of necessary net metering equipment, unless Power Company elects to install the net metering equipment on a location controlled by it.

5.2.2 Electric Generating Facility and Equipment Design and Construction. Consumer shall, at its sole expense, design, construct, and install the Electric Generating Facility and all equipment needed to interconnect the Electric Generating Facility with the Power Company Distribution System, except for any Interconnection Facilities to be constructed by Power Company pursuant to Exhibit A hereof. The Consumer's Interconnection Facilities and equipment shall satisfy all requirements of applicable safety and engineering codes, including the Power Company's, and further, shall satisfy all requirements of any duly-constituted regulatory authority having jurisdiction and the requirements of Transmission Owner and Transmission Provider (including, without limitation, those of requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof). Consumer shall submit all specifications for Consumer's Interconnection Facilities and equipment, including System Protection Facilities, to the Power Company for review at least ninety (90) days prior to interconnecting such Interconnection Facilities and equipment with the Power Company Distribution System. Power Company's review of Consumer's specifications shall be construed neither as confirming nor as endorsing the design, nor as any warranty as to fitness, safety, durability or reliability of Consumer's interconnection facilities or equipment. Power Company shall not, by reasons of such review or failure to review, be responsible for strength, details of design, adequacy or

capacity of Consumer's Interconnection Facilities or equipment, nor shall Power Company's acceptance be deemed to be an endorsement of any facility or equipment. Consumer agrees to make changes to its Interconnection Facilities and equipment as may be reasonably required to meet the requirements of the Power Company. In the event it becomes necessary for Power Company to alter, add to, relocate or rearrange the Interconnection Facilities or to rearrange or relocate existing Power Company-owned facilities which are not Interconnection Facilities to continue to conduct interconnected operations in accordance with Good Utility Practice, then Consumer shall pay for such work.

ARTICLE 6 -- METERING

Power Company shall purchase and install Net Metering Equipment to meter the Power Company's electric service to the Consumer and the electrical output of the Electric Generating Facility. Power Company shall own, operate and maintain the Net Metering Equipment. All costs associated with the purchase, installation, ownership, operation and maintenance of Net Metering Equipment, as more fully described in Exhibit B hereof shall be borne by Consumer.

ARTICLE 7 -- INFORMATION REPORTING

Consumer shall promptly provide to the Power Company all relevant information, documents, or data regarding the Consumer's facilities and equipment that have been reasonably requested by the Power Company.

ARTICLE 8 -- INDEMNITY AND LIABILITY

Consumer agrees to fully indemnify, release, and hold Power Company, its members, trustees, officers, managers, employees, agents, representatives, and servants, Power Company's affiliated and associated companies, and their respective members, trustees, shareholders, directors, partners, stakeholders, officers, managers, employees, agents, representatives, and servants, and Power Company's successors and assigns, harmless from and against any and all claims, demands, liabilities, losses, damages, costs and expenses (including attorneys' fees and other costs of defense) of any nature or kind whatsoever, including, but not limited to, claims, demands and/or liabilities for personal injury to (including death of) any person whomever (including payments and awards made to employees or others under any workers' compensation law or under any plan for employees' disability and death benefits) and for damage to any property whatsoever (including Consumer's Electric Generating Facility, the Power Company Distribution System, and the transmission system of Transmission Owner) arising out of or otherwise resulting from the use, ownership, maintenance, or operation of the Electric Generating Facility or the Interconnection Facilities, regardless of whether such claims, demands or liability are alleged to have been caused by negligence or to have arisen out of Power Company's status as the owner or operator of facilities involved; provided, however, that the foregoing shall not apply to the extent that any such personal injury or property damage is held to have been caused by the gross negligence or intentional wrongdoing of Power Company or its agents or employees. Neither party shall be liable in statute, contract, in tort (including negligence), strict liability, or otherwise to the other party, its agents, representatives, affiliated and associated companies, or assigns, for any incidental or consequential loss or damage

whatsoever, including, but not limited to, loss of profits or revenue, resulting from any party's performance or non-performance of an obligation imposed on it by this Agreement.

ARTICLE 9 – BUCKEYE, TRANSMISSION OWNER AND TRANSMISSION PROVIDER CONSENT

The consent of Buckeye, the Transmission Owner and/or Transmission Provider, if the Power Company determines that such consent is required, shall be required prior to any interconnection of the Consumer's Electric Generating Facility with the Power Company Distribution System.

ARTICLE 10 – TERM

This Agreement shall commence as of _____ and shall terminate upon the termination of the Agreement for Electric Service.

ARTICLE 11 – MISCELLANEOUS

This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors, legal representatives and assigns; provided, however, this Agreement shall not be assigned by the Consumer without the prior written consent of the Power Company, any such assignment by the Consumer being null and void without such consent. This Agreement shall not be effective unless approved in writing by all governmental agencies from which approval is required. This Agreement shall be governed by and construed in accordance with the laws of the State of Ohio, except for any conflicts of laws provisions. This Agreement may not be modified except in a writing signed by both parties hereto.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first written above.

Firelands Electric Cooperative

By: _____

Name:_____

Title:_____

_____

By: _____

Name:_____

Title:_____

EXHIBIT A
INTERCONNECTION FACILITIES

This Exhibit A is a part of the Agreement for Interconnection and Parallel Operation between Consumer and Power Company.

Point of Interconnection

The point of interconnection will be at the point where _____. See Drawing No. _____, dated _____, which drawing is attached hereto and made a part hereof.

Interconnection Facilities to be Furnished by Power Company

Power Company shall construct the following interconnection facilities:

_____

Interconnection Facilities to be Furnished by Consumer

Consumer shall construct the following interconnection facilities:

_____

Cost Responsibility

Consumer shall be solely responsible for all costs associated with Consumer's construction of Interconnection Facilities.

Consumer and Power Company hereby acknowledge and agree that the cost listed below is only an estimate and that Consumer hereby agrees to and shall reimburse Power Company for all actual costs, including any applicable taxes, associated with the Power Company's construction of Interconnection Facilities as set forth in this Exhibit A. The cost of the Power Company's Interconnection Facilities is estimated to be $_____.

EXHIBIT B
NET METERING EQUIPMENT

This Exhibit B is a part of the Agreement for Interconnection and Parallel Operation between Consumer and Power Company.

The net metering facilities are to be located _____.

Power Company, at Consumer's expense, will purchase, install, own, operate, and maintain the following net metering instrumentation as required for on site metering and telemetering:

Net metering will be accomplished using a single meter or pair of meters capable of registering the flow of electricity in each direction from the Power Company's electric distribution system to Consumer's electric consuming facilities located on the Premises, and from Consumer's Electric Generating Facility to Power Company's electric distribution system. If the existing electrical meter or meters in service at the Consumer's Premises is/are not capable of measuring the flow of electricity in each direction, the Power Company will purchase, install, own, operate, and maintain an approved meter or meters that is/are capable of measuring electricity in each direction. The Consumer will pay the Power Company all expenses involved in either modifying the existing meter(s) or providing a new meter(s) capable of measuring the flow of electricity in each direction. Maintenance of the meter(s) will be the responsibility of the Power Company, which will own the meter(s).

Consumer and Power Company hereby acknowledge and agree that the cost listed below is only an estimate and that Consumer hereby agrees to and shall reimburse Power Company for all actual costs, including any applicable taxes, for the Power Company to purchase, install, own, operate, and maintain Net Metering Equipment as set forth in this Exhibit B. The cost for the Net Metering Equipment is estimated to be $_____.

EXHIBIT C
POWER COMPANY REQUIREMENTS

[Cooperative's Rules and Regulations for Qualifying Cogeneration and Small Power Production Facilities and the Cooperative's Technical Guidelines for Interconnection and Parallel Operation]

EXHIBIT D
TRANSMISSION OWNER AND/OR TRANSMISSION PROVIDER REQUIREMENTS

EXHIBIT E
ELECTRIC GENERATING FACILITY DESCRIPTION

AGREEMENT FOR ELECTRIC SERVICE FOR QUALIFYING CO-GENERATION OR SMALL POWER PRODUCTION FACILITIES UP TO 25 KW WITH NET METERING

This Agreement, made as of the ____ day of _____, 20___, between Firelands Electric Cooperative, Inc. (hereinafter called "the Power Company") and _____ (hereinafter called the "Consumer"), whose mailing address is _____, for electric service at _____ situated generally at the intersection of _____ and _____ in _____, _____ County, Ohio (hereinafter called the "Premises");

WITNESSETH:

WHEREAS, the Power Company is a not-for-profit corporation organized under the laws of the State of Ohio engaged in the business of selling electric power and energy with its principal place of business in Huron County, Ohio; and

WHEREAS, the Consumer is [a _____ organized under the laws of the State of _____ doing business in the State of Ohio, which] or [an individual who] owns and operates all land and facilities located on the Premises; and

WHEREAS, the Consumer has or will install on the Premises certain consumer-owned electric generating facilities up to 25 kW in the aggregate, which electric generating facilities (the "Electric Generating Facility") are more particularly described in Exhibit E to the Agreement for Interconnection and Parallel Operation of Qualifying Cogeneration or Small Power Production Facilities up to 25 kW of even date herewith by and between the Power Company and the Consumer (the "Agreement for Interconnection and Parallel Operation"); and

WHEREAS, the Electric Generating Facility is a certified qualifying cogeneration or small power production facility under the Public Utility Regulatory Policies Act of 1978, as amended, and all governmental regulations lawfully promulgated thereunder ("PURPA"); and

WHEREAS, the output of the Electric Generating Facility is not reasonably anticipated to exceed the annual electric energy requirements of Consumer's electric consuming facilities located on the Premises; and

WHEREAS, the Consumer desires to interconnect the Electric Generating Facility to the Power Company's electric distribution system and to use the output of the Electric Generating Facility to first meet the requirements of the Consumer's electric consuming facilities located on the Premises and then transfer to the Power Company any such output in excess of the requirements of the Consumer's electric consuming facilities and receive a credit against the Consumer's bill for electric service under the Net Metering arrangements described in this Agreement, the Agreement for Interconnection and Parallel Operation, and the Power Company's Distributed Generation Rate Schedule, which is attached hereto; and

WHEREAS, the Power Company desires to sell, and the Consumer desires to purchase, electric power and energy to meet the requirements of Consumer's electric consuming facilities not served by the Electric Generating Facility under the terms and conditions hereinafter set forth; and

WHEREAS, a single meter or pair of meters has been or will be installed at the Premises, which meter or meters is/are capable of registering the flow of electricity in each direction from Power Company's electric distribution system to Consumer's electric consuming facilities on the Premises, and from Consumer's Electric Generating Facility to Power Company's electric distribution system, at the point of interconnection ("Net Metering");

NOW, THEREFORE, in consideration of the premises and the mutual covenants herein contained, the parties hereto agree as follows:

1. Subject to the terms and conditions of this Agreement, the Power Company shall sell and deliver to the Consumer, and the Consumer shall purchase and receive, all of the electric power and energy which the Consumer may need at the Premises up to _____ kW, except for any such electric demand and energy which is served by Consumer's Electric Generating Facility.

2. Service hereunder shall be alternating current, _____ phase, _____ cycles, _____ volts.

3. The Consumer shall pay the Power Company for service hereunder at the rate and upon the terms and conditions set forth in the Power Company's Distributed Generation Rate Schedule, which is attached hereto and a made a part of this Agreement as if fully restated herein. The Power Company's Distributed Generation Rate Schedule will be superseded by any new or amended Distributed Generation Rate Schedule or any successor

rate schedule as approved from time to time by the Board of Trustees of the Power Company. Payment for the service provided hereunder shall be made at the office of the Power Company located in Huron County, Ohio, or at such other place as the Power Company shall hereafter designate in writing.

4. If the Consumer shall fail to make any such payment within fifteen (15) days after such payment is due, the Power Company may discontinue service to the Consumer upon giving no less than fifteen (15) days written notice to the Consumer of its intention to do so, provided however, that such discontinuance of service shall not relieve the Consumer of any of its obligations under this Agreement.

5. The Consumer is or shall become a member of the Power Company and be bound by such rules and regulations as may from time to time be adopted by the Power Company.

6. The Consumer shall not use the electric power and energy furnished hereunder as an auxiliary or supplement to any other source of electric power and energy and shall not sell or transfer to others the electric power and energy purchased hereunder, without permission of the Power Company; provided, however, that Consumer may operate the Electric Generating Facility upon the terms and conditions and for the purposes set forth in this Agreement, the Agreement for Interconnection and Parallel Operation, and the Power Company's Distributed Generation Rate Schedule which is attached hereto and made a part of this Agreement as if fully restated herein. The Consumer represents and warrants to the Power Company that the Electric Generating Facility is a certified qualifying cogeneration or small power production facility under PURPA. The Consumer represents and warrants to the Power Company that the output of the Electric Generating Facility is not reasonably anticipated to exceed the annual electric energy requirements of Consumer's electric consuming facilities located on the Premises.

7. The Consumer shall use the output of the Electric Generating Facility first to meet the requirements of Consumer's electric consuming facilities located on the Premises. Any output of the Electric Generating Facility in excess of the requirements of Consumer's electric consuming facilities shall be transferred to the Power Company and credited against the Consumer's bill for electric service hereunder in accordance with the Net Metering arrangements set forth in this Agreement, the Agreement for Interconnection and Parallel Operation, and the Distributed Generation Rate Schedule attached hereto. Consumer shall

only be entitled to receive a billing credit for any such output of the Electric Generating Facility in excess of the requirements of the Consumer's facilities, and in no event shall the Consumer be entitled to receive any payment from the Power Company for any such excess output of the Electric Generating Facility. The Power Company shall be entitled to all environmental attributes of the Electric Generating Facility during the term of this Agreement. The Power Company shall have the sole and exclusive right to designate the Electric Generating Facility as a renewable resource during the term of this Agreement in order to satisfy any federal, state or local renewable energy requirement, renewable energy procurement requirement, renewable energy portfolio standard, or other renewable energy mandate.

8. Whenever the Power Company's facilities located at the Premises are relocated solely to suit the convenience of the Consumer, the Consumer shall reimburse the Power Company for the entire cost incurred in making such change.

9. (a) The Power Company will use reasonable diligence in furnishing a regular and uninterrupted supply of electric power and energy, but does not guarantee uninterrupted service. The Power Company shall not be liable for damages or other losses in case such supply is interrupted, curtailed, reduced, fluctuates, becomes irregular, or fails, or the commencement of service to the Consumer is delayed by reason of an act of God, the public enemy, accidents, labor disputes, orders or acts of civil or military authority, governmental action, loss of power supply, breakdowns or injury to the machinery, transmission or distribution lines or other facilities of the Power Company, repairs, maintenance or any cause beyond the Power Company's control; provided, however, that in no event shall the Power Company be liable for personal injury, wrongful death, property damage or other losses not caused by or due to the gross negligence or willful and wanton misconduct of the Power Company; provided, further, however, that in no event shall the Power Company be liable for consequential damages of any nature whatsoever in case such supply of power and energy should be interrupted, curtailed, reduced, fluctuates, becomes irregular, or fails, or the commencement of service to the Consumer is delayed; and provided further that the failure of the Consumer to receive electric power and energy because of any of the aforesaid conditions shall not relieve the Consumer of its obligation to make payments to the Power Company as provided herein.

(b) The point at which service is delivered by the Power Company to the Consumer, and at which the output of Consumer's Electric Generating Facility is transferred to the Power Company, to be known as the "point of interconnection", shall be the point at which the Consumer's electric consuming facilities located on the Premises are connected to the Power Company's electric distribution system, and the point at which Consumer's Electric Generating Facility is connected to the Power Company's electric distribution system. The Power Company shall not be liable for any loss, injury or damage resulting from the Consumer's use of its facilities or equipment or occasioned by the power and energy furnished by the Power Company beyond the point of interconnection.

(c) The Consumer shall provide and maintain suitable protective devices on its equipment to prevent any loss, injury or damage that might result from any fluctuation or irregularity in the supply of electric power and energy. The Power Company shall not be liable for any loss, injury or damage resulting from any fluctuation or irregularity in the supply of power and energy which could have been prevented by the use of such protective devices.

(d) The Power Company will provide and maintain the necessary lines or service connections, metering and other apparatus which may be required for the proper measurement of and rendition of its service, and for the proper measurement of the output of Consumer's Electric Generating Facility. All such apparatus shall be owned and maintained by the Power Company. A single meter or pair of meters will be installed which shall be capable of registering the flow of electricity in each direction from the Power Company's electric distribution system to Consumer's electric consuming facilities located on the Premises, and from the Consumer's Electric Generating Facility to Power Company's electric distribution system, at the point of interconnection.

10. In the event of loss or injury to the property of the Power Company through misuse by, or the negligence of, the Consumer or the employees of the same, the cost of the necessary repairs or replacement thereof shall be paid to the Power Company by the Consumer.

Consumer will be responsible for any person tampering with, interfering with, or breaking the seals or meters or other equipment of the Power Company installed at the Premises. The Consumer hereby agrees that no one except the employees of or persons duly authorized by the Power Company shall be allowed to make any internal or external

adjustments of any meter or any other piece of apparatus which shall be the property of the Power Company. The Consumer shall provide the Power Company reasonable access at all times to the Power Company's meters and other facilities of the Power Company located on the Premises.

11. Metering equipment used in determining the demand and amount of electric power and energy supplied hereunder, and the demand and amount of electric power and energy produced by Consumer's Electric Generating Facility, shall be tested and calibrated, if required, by the Power Company. If any metering equipment shall be found inaccurate, it shall be restored to the extent possible to a 100.0%, or within two percent (2%) above or below 100.0%, accuracy at full load condition; or new metering equipment to the extent necessary shall be substituted so that, as far as possible, 100.0% ± 2% accuracy shall always be maintained. The Consumer shall have the right to request that a special meter test be made at any time. In the event a test made at the Consumer's request discloses that the meter tested is registering correctly, or within two percent (2%) above or below 100.0% accuracy at full load, Consumer shall bear the expense of such meter test.

The results of all such tests and calibrations shall be open to examination by the Consumer and a report of every requested test shall be furnished to the Consumer. Any meter tested and found to be not more than two percent (2%) above or below 100.0% accuracy at full load, shall be considered to be accurate in so far as correction of billing is concerned. If as a result of any test, any meter is found to register in excess of two percent (2%) above or below 100.0% accuracy at full load, then the readings of such meter previously taken for billing purposes shall be corrected according to the percentage of inaccuracy so found, but no such correction shall extend beyond the last regular monthly billing period occurring prior to the day on which inaccuracy is discovered by such test, and no correction shall be made for a longer period than that during which it may be determined by mutual agreement of the parties involved that the inaccuracy existed. The Power Company will bear the cost of the meter test if any meter is found to register in excess of two percent (2%) above or below 100.0% accuracy at full load.

For any period that metering equipment is found to have failed wholly, or in part, to register and for which no alternate metering is available, it shall be assumed that the demand established, or electric energy delivered, as the case may be, during said period is the same as that for a period of like operation during which such meter was in service and operating.

The Power Company shall notify the Consumer in advance of the time of any meter test so that a representative of the Consumer may be present.

12. Duly authorized representatives of the Power Company shall be permitted to enter the Premises at all reasonable times in order to carry out the provisions hereof.

13. This Agreement shall become effective as of the date first above written and shall remain in effect until terminated by either party giving to the other party not less than ninety (90) days prior notice in writing of its intention to terminate.

14. (a) This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors, legal representatives and assigns; provided, however, this Agreement shall not be assigned by the Consumer without the prior written consent of the Power Company, any such assignment by the Consumer being null and void without such consent.

(b) This Agreement shall not be effective unless approved in writing by all governmental agencies from which approval is required.

15. This Agreement shall be governed by and construed in accordance with the laws of the State of Ohio, except for any conflicts of laws provisions.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives as of the date first written above.

Firelands Electric Cooperative, Inc.

WITNESS: By: _____

_____ Name: _____

Title: _____

WITNESS: _____

_____ By: _____

Name: _____

Title: _____

FIRELANDS ELECTRIC COOPERATIVE, INC.

SINGLE-PHASE DISTRIBUTED GENERATION RATE
SCHEDULE DG

AVAILABILITY AND APPLICABILITY:

Available to Members of Firelands Electric Cooperative, Inc. contracting for electric service from the Cooperative who, through the operation of qualifying single-phase cogeneration or small power production facilities as defined in the Cooperative's Operational Policy relating thereto, with a design capacity of 25 kilowatts or less, have available electric energy and the associated capacity which they desire to sell to the Cooperative in accordance with the requirements of the Public Utility Regulatory Policies Act of 1978 (PURPA), as amended, and all governmental regulations lawfully promulgated thereunder and the Cooperative's applicable rules, regulations, policies and rate schedules, in circumstances where the output of such facility is not reasonably anticipated to exceed the annual electric energy requirements of the Member and provided that the total aggregate electric generating capacity of all qualifying facilities interconnected to the electric distribution systems of the members of Buckeye Power, Inc. (Buckeye) and net metered does not exceed 1% of Buckeye's aggregate peak electric demand of all of the Buckeye members.

NET METERING:

Compliance with applicable rules, regulations, policies and terms of this rate schedule is a condition precedent to purchases hereunder. The Member shall use the output of the qualifying facility first to meet the requirements of Member's electric consuming facilities located on the Premises. Any output of the qualifying facility in excess of the requirements of Member's electric consuming facilities shall be transferred to the Cooperative and credited against the Member's bill for electric service hereunder. Member shall only be entitled to receive a billing credit for any such output of the qualifying facility in excess of the requirements of the Member's facilities, and in no event shall the Member be entitled to receive any payment from the Cooperative for any such excess output of the qualifying facility.

RATE:

Distribution Charge: $29.00 /month

Energy Charge:

Summer (electricity consumed in Jun, Jul, Aug and Sep)

First 200 kWh	$0.11800 /kWh
Next 800 kWh	$0.10270 /kWh
Over 1000 kWh	$0.08600 /kWh

Winter (electricity consumed in all other months)

First 200 kWh	$0.09800 /kWh
Next 800 kWh	$0.08270 /kWh
Over 1000 kWh	$0.06600 /kWh

MONTHLY MINIMUM CHARGE:

The monthly minimum charge under this schedule shall be the Distribution Charge, or such other minimum as may be established by contract.

Seasonal disconnects will not avoid the minimum monthly charge.

WHOLESALE POWER AND TAX COST ADJUSTMENT:

The rates and charges set forth in this schedule are subject to increase or decrease by application of the adjustments specified in Rider A.

TERMS OF PAYMENT:

The above rates and other applicable charges hereinafter set forth are net and are due and payable on or before the date specified on the bill. If not so paid, the gross amount applies and service will be subject to disconnection as provided in the Cooperative's rules and regulations. Trips for collection of past due amounts and reconnection of disconnected services shall be subject to the Cooperative's charges for such special services.

USE OF SERVICE:

Service under this schedule shall not be resold or shared with others.

OTHER CHARGES FOR SPECIAL SERVICES:

See the Cooperative’s general rules and regulations as to other applicable charges.

METERING:

Meters are read monthly through an automated meter reading system (AMR). However, the Cooperative reserves the right to read any meter at any time and bill on a monthly basis or use an estimated meter reading. Net metering will be accomplished using a single meter or pair of meters capable of registering the flow of electricity in each direction from the Cooperative’s electric distribution system to Member's electric consuming facilities located on the Premises, and from Member's qualifying facility to Cooperative’s electric distribution system.

RULES AND REGULATIONS:

The Cooperative’s rules and regulations relating to the purchases from qualifying cogeneration and small power production facilities as they are now in effect or as they may hereafter be amended from time to time, are incorporated into and made a part of this rate schedule as if contained herein. The Member shall comply with all the provisions of such rules and regulations.

Appendix C: Utility Interconnection Agreements (cont.)

Firelands Rural Electric (>25 kW)

Renewable Energy Program

Small Power Production Facilities Greater than 25 KW

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Presented to BOT on
March 13, 2006

APPLICATION FOR INTERCONNECTION AND PARALLEL OPERATION

Return Completed Application to:

Firelands Electric Cooperative
Attention: Engineering Department
P.O. Box 32, New London, OH 44851

Customer's Name:_____

Address:_____

Contact Person:_____

Telephone Number:_____

Service Point Address:_____

Information Prepared and Submitted By:_____

(Name and Address)_____

The following information shall be supplied by the Customer or Customer's designated representative. All applicable items must be accurately completed in order that the Customer's generating facilities may be effectively evaluated for interconnection with the Cooperative's Distribution System.

GENERATOR

Number of Units:_____

Manufacturer:_____

Type (Synchronous, Induction, or Inverter):_____

Fuel Source Type (Solar, Natural Gas, Wind, etc.):_____

Kilowatt Rating (95 F at location)_____

Kilovolt-Ampere Rating (95 F at location):_____

Power Factor:_____

Voltage Rating:_____

Ampere Rating:_____

Number of Phases:_____

Frequency:_____

Do you plan to export power: _____ Yes _____ No

If Yes, maximum amount expected:_____

If Yes, do you expect the amount of exported energy to exceed your requirements for electric energy at the service address on an annual basis? _____ Yes _____ No

Estimated annual requirements for electric energy at the service address: _____ Kilowatt-hours

Expected Energizing and Start-up Date_____

Normal Operation of Interconnection: (examples: provide power to meet base load, demand management, standby, back-up, other) (please describe)_____

One-line diagram attached: _____ Yes

Have testing results been supplied to the Cooperative documenting conformance with the Cooperative's technical requirements: _____ Yes [Note: Requires a Yes for complete Application.]

Have all necessary government permits and approvals been obtained for the project prior to this application: _____ Yes [Note: Requires a Yes for an Application to be considered complete.]

Has the generator been certified as a qualifying cogeneration or small power production facility under the Public Utility Regulatory Policies Act of 1978: _____ Yes [Note: Requires a Yes for an Application to be considered complete.]

Have the generator manufacturer machine characteristics been supplied to the Company:

_____ Yes [Note: Requires a Yes for complete Application.]

Layout sketch showing lockable, "visible" disconnect device: ____ Yes

Application fee:_____Yes $_____

Checks are payable to:_____ at _____

DATE: By: _____
(Signature)

Name: _____

Title: _____

FIRELANDS ELECTRIC COOPERATIVE, INC.
NEW LONDON, OHIO

Technical Guidelines for Interconnection and Parallel Operation

APPLICABILITY

These rules apply to interconnection and parallel operation of DG (Distributed Generation) equipment that, in sum, is rated less than 1 megawatt on radially operated Cooperative distribution lines up to 12.47 kV three phase (7.2 kV single phase). Interconnections to higher voltage lines will be made at the discretion of the Cooperative.

1.0 DEFINITIONS

Distributed Generation (DG) Facility – Includes any qualifying cogeneration or small power production facility meeting all definitional requirements under the Public Utility Regulatory Policies Act of 1978, as amended, and all governmental regulations lawfully promulgated thereunder.

Flicker – A variation of input voltage sufficient in magnitude and duration to allow visual observation of a change in electric lighting source intensity, as defined in IEEE Standard 141-1993. See Also Exhibit 1, attached, specifically the curve "Border Line of Visibility".

Facilities Study – An engineering study conducted to determine the modifications to the existing cooperative system that will be needed to accommodate connection and safe operation of the DG Facility

Harmonic Distortion – Distortion of the normal sine waveform; typically caused by nonlinear loads or by inverters attached to the system on customer premises.

Interconnection Agreement – A legal contract for the connection of the DG Facility to the Cooperative's lines, specifying the location, size, cost, manner of payment, terms of operation, and respective responsibilities of the Cooperative and the DG Facility owner.

Point of Common Coupling – The point at which a DG Facility is connected to the Cooperative's electric distribution system.

Radially Operated System – An electric distribution system that is normally operated with only one supplying line connected to a load at any one time.

Single Phasing Condition – Occurs when electric flow through one phase of a three phase supply line or device is interrupted.

Short Circuit Contribution – The result, expressed as a percentage, of dividing the maximum short circuit contribution of the DG Facility (or Facilities) by the short circuit contribution available from the Cooperative's system, without the DG Facility (or Facilities).

Supplemental Review - Review of functional technical requirements to determine acceptability of equipment to be used to connect and safely operate the DG Facility on the Cooperative's lines

System Impact Study – An engineering study to assess the ability of the existing cooperative system to accommodate connection and safe operation of the DG Facility.

Unintentional Island - An unplanned condition where a portion of the Cooperative's electric distribution system that is physically disconnected from the Cooperative's power supply remains energized as a result of power supplied by one or more DG facilities.

2.0 CUSTOMER DESIGN REQUIREMENTS

For an interconnection to be safe to Cooperative employees and equipment and to other customers, the following minimum conditions are required to be met by DG Facilities. At the discretion of the Cooperative, additional conditions may be required to be met:

2.1 DG Facilities must meet all applicable national, state, and local construction, operation and maintenance related safety codes, such as National Electrical Code (NEC), National Electrical Safety Code (NESC), and Occupational Safety and Health Administration (OSHA) requirements.

2.2 DG Facility owner must provide the Cooperative with a one-line diagram showing the configuration of the proposed DG system, including the protection and controls, disconnection devices, nameplate rating of each device, power factor rating, transformer connections, and other information deemed relevant by the DG owner and/or the Cooperative. If the proposed DG system does not pass the screening process for simplified interconnection, Exhibit 2 attached hereto, additional information may be necessary from the DG Facility owner, and Cooperative system changes may be required.

2.3 DG Equipment must be equipped with adequate protection and control to trip[1] the unit off line during abnormal[2] system conditions, according to the following requirements:

2.3.1 Undervoltage or overvoltage within the trip time indicated below. By agreement of both the DG owner and the Cooperative, different settings maybe used for the under voltage and over voltage trip levels or time delays.

V=Nominal SystemVoltage	Maximum Trip Time
V<50%	10 cycles
50%≤V<88%	120 cycles
110%<V<120%	60 cycles
V≥120%	6 cycles

2.3.2 For three phase generation, loss of balanced three-phase voltage or a single phasing condition within the trip times indicated in 2.3.1 when voltage on at least one phase reaches the abnormal voltage levels.

2.3.3 Underfrequency or overfrequency: All DG Facilities shall follow the associated Cooperative distribution line frequency within the range

[1] To trip is to automatically (without human intervention required) open the appropriate disconnection device to separate the DG equipment from the power system.

[2] Abnormal system conditions include faults due to adverse weather conditions including but not limited to, floods, lightning, vandalism, and other acts that are not under the control of the Cooperative. This may also result from improper design and operation of customer facilities resulting from non-compliance with accepted industry practices.

59.3 Hz to 60.5 Hz. DG Facilities rated at less than 10 kW shall disconnect from the Cooperative within 10 cycles if the frequency goes outside this range. A DG rated more than 10kW shall (1) disconnect from the Cooperative within 10 cycles if the frequency exceeds 60.5 Hz, and (2) be capable of time delayed disconnection for frequencies in the range 59.3 Hz to 57 Hz. By agreement of both the DG operator and the Cooperative, different settings maybe used for the under frequency and over frequency trip levels or time delays.

2.4 DG equipment requires the following additional protection to avoid damage to the Cooperative's system during normal, as well as abnormal system conditions.

2.4.1 Synchronizing controls to insure a safe interconnection with the Cooperative's distribution system. The DG equipment must be capable of interconnection with minimum voltage and current disturbances. Synchronous generator installations, as well as other types of installations, must meet the following: slip frequency less than 0.2 Hz, voltage deviation less than $\pm$ 10%, phase angle deviation less than $\pm$ 10 degrees, breaker closure time compensation (not needed for automatic synchronizer that can control machine speed).

2.4.2 A disconnect switch to isolate the DG equipment for purposes of safety during maintenance and during emergency conditions. The Cooperative may require a disconnect device to be provided, installed by, and paid for by the customer, which is accessible to and lockable by Cooperative personnel, either at the primary voltage level, which may include load-break cutouts, switches and elbows, or on the secondary voltage level, which may include a secondary breaker or switch. The switch must be clearly labeled as a DG disconnect switch.

2.5 DG equipment must have adequate fault interruption and withstand capacity, and adequate continuous current and voltage rating to operate properly[3] with the Cooperative's system. A three-phase device shall interrupt all three phases simultaneously. The tripping control of the circuit interrupting device shall be powered independently of the utility AC source, for example by a battery or stored energy device, in order to permit operation upon loss of the Cooperative distribution system connection.

2.6 Test results shall be supplied by the manufacturer or independent testing lab that verify, to the satisfaction of the Cooperative, compliance with the following requirements contained in this document[4]:

2.6.1 Over/Under Voltage Trip Settings (ref. 2.3.1)
2.6.2 Over/Under Frequency Trip Settings (ref 2.3.3)
2.6.3 Synchronization (ref 2.4.1)

[3] Properly, in this context, means within the acceptable Cooperative or industry established practices.
[4] For photovoltaic systems, a certification that the testing requirements of UL 1741 have been met may be used in place of these tests.

2.6.4 Harmonic Limits (tested at 25%[5] of full load rating or at a level as close to the minimum level of rated output the unit is designed to operate as practical and at a level as close to 100% of full load rating as practical) (ref 2.7)

2.6.5 DC Current Injection Limits (Inverters) (ref 2.8)

2.6.6 Anti-Islanding (Inverters) (2.13)

2.6.7 Prevent Connection or Reconnection to De-energized System (ref 2.14)

If test results are acceptable to the Cooperative and if requested by a manufacturer, the Cooperative may supply a letter indicating the protective and control functions for a specific DG Facility model are approved for interconnection with the Cooperative's distribution system, subject to the other requirements in this document. The Cooperative reserves the right to review the suitability of previously approved protective and control functions.

The DG Facility owner shall have the DG Facility inspected by the Cooperative and any required local inspectors to (i) verify correct protective settings and connections of the DG Facility to the Cooperative system prior to the first parallel operation, and (ii) shall have testing performed to the satisfaction of the Cooperative to verify proper operation of the DG Facility.

2.7 Harmonics and Flicker: The DG equipment shall not be a source of excessive harmonic voltage and current distortion and/or voltage flicker. Limits for harmonic distortion (including inductive telephone influence factors) will be as published in the latest issues of ANSI/IEEE 519, "Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems." Flicker occurring at the point of compliance shall remain below the Border Line of Visibility curve on the IEEE/GE curve for fluctuations less than 1 per second or greater than 10 per second. However, in the range of 1 to 10 fluctuations per second, voltage flicker shall remain below 0.4%. Refer to Exhibit 1. When there is reasonable cause for concern due to the nature of the generation and its location, the Cooperative may require the installation of a monitoring system to permit ongoing assessment of compliance with these criteria. The monitoring system, if required, will be installed at the DG owner's expense. Situations where high harmonic voltages and/or currents originate from the distribution system are to be addressed in the Interconnection Agreement.

2.8 DC Current Injection from inverters shall be maintained at or below 0.5% of full rated inverter output current into the point of common coupling.

2.9 The Distributed Generation's generated voltage shall follow, not attempt to oppose or regulate, changes in the prevailing voltage level of the Cooperative at the point of common coupling, unless otherwise agreed to by the operators of the Distributed Generation and the Cooperative. Distributed Generation

[5] If the device is not designed to operate at this level, then the test should be at the lowest level at which it is designed to operate.

installed on the downstream (load) side of the Cooperative's voltage regulators shall not degrade the voltage regulation provided to the downstream customers of the Cooperative to service voltages outside the limits of ANSI 84.1, Range A

2.10 System Grounding: The DG Facility shall be grounded in accordance with applicable codes. The interconnection of the DG equipment with the Cooperative's system shall be compatible with the neutral grounding method in use on the Cooperative's system. For interconnections through a transformer to Cooperative system primary feeders of multi-grounded, four-wire construction, or to tap lines of such systems, the maximum unfaulted phase (line-to-ground) voltages on the Cooperative system primary feeder during single line-to-ground fault conditions with the Cooperative system source disconnected, shall not exceed those voltages which would occur during the fault with the Cooperative system source connected and no DG Facilities connected.

2.11 System Protection: The DG owner is responsible for providing adequate protection to Cooperative facilities for conditions arising from the operation of generation under all Cooperative distribution system operating conditions. The owner is also responsible for providing adequate protection to their facility under any Cooperative distribution system operating condition whether or not their DG is in operation. Conditions may include but are not limited to:

1. Loss of a single phase of supply,
2. Distribution system faults,
3. Equipment failures,
4. Abnormal voltage or frequency,
5. Lightning and switching surges,
6. Excessive harmonic voltages,
7. Excessive negative sequence voltages,
8. Separation from supply,
9. Synchronizing generation,
10. Re-synchronizing the Owner's generation after electric restoration of the supply.

2.12 Feeder Protective Coordination. In the case of a Cooperative protective function initiating a trip of a Cooperative protective device, the DG Facility protection and controls shall be designed to coordinate with the Cooperative protective device, and shall isolate the DG Facility from the Cooperative's lines.

2.13 Unintentional islanding: For an unintentional island in which the DG and a portion of the Cooperative's system remain energized through the point of common coupling, the DG shall cease to energize the Cooperative system.

2.14 The DG shall be designed to prevent the DG facility from being connected to a de-energized Cooperative system. The customer should not reconnect the DG facility to the Cooperative's system after a trip from a system protection device until the Cooperative's system is re-energized for a minimum of five minutes.

2.15 If the customer connects a backup generator directly to the customer's wiring to serve any load on the customer's site, he shall utilize a double-throw transfer switch in order to ensure that no power is fed back onto the Cooperative's distribution system. *This is a critical safety requirement.*

2.16 Voltage deviation from normal Cooperative line voltage at the point of common coupling caused by the DG facility shall not under any condition exceed 3%, calculated by dividing the maximum deviation from average line voltage by the average line voltage, with the result multiplied by 100.

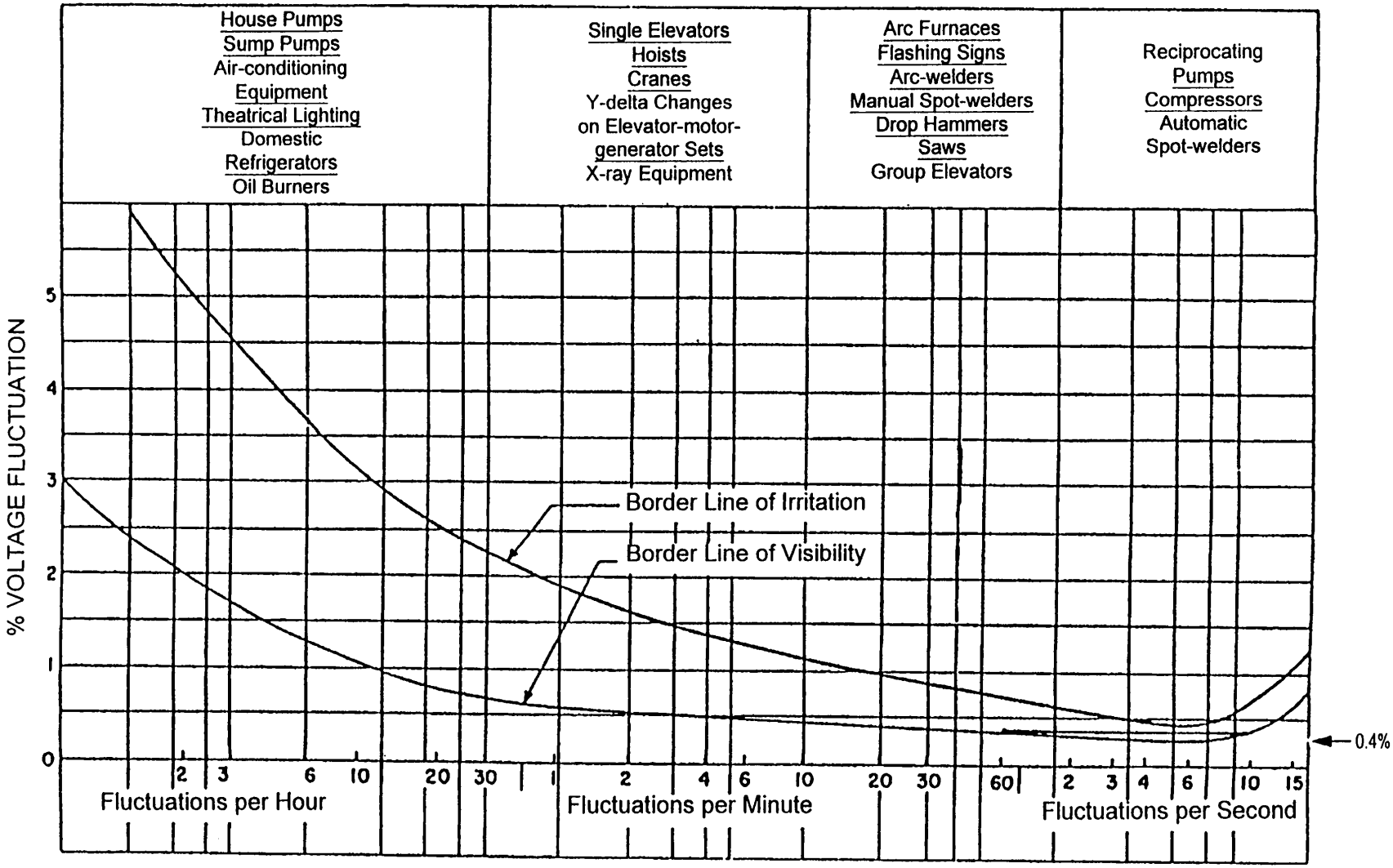
3.0 CUSTOMER OPERATING PROCEDURES

3.1 If high-voltage, low-voltage, or voltage flicker complaints arise from other customers due to the operation of customer DG, the customer may be required to disconnect his or her generation equipment from the Cooperative's system until the problem has been resolved.

3.2 The operation of the DG equipment must not result in harmonic currents or voltages at the point of common coupling that will interfere with the Cooperative's metering accuracy and/or proper operation of facilities and/or with the loads of other customers. Such adverse effects may include, but are not limited to heating of wiring and equipment, over voltage, communication interference, etc. If such a condition is found, the Cooperative may require the DG Facility to be disconnected from the Cooperative lines until the problem is resolved.

3.3 The DG Facility owner must discontinue parallel operation when requested by the Cooperative after prior notice. If the Cooperative has notified the DG Facility owner that an emergency situation exists, the DG Facility owner shall immediately discontinue parallel operation of the DG Facility with the Cooperative's lines.

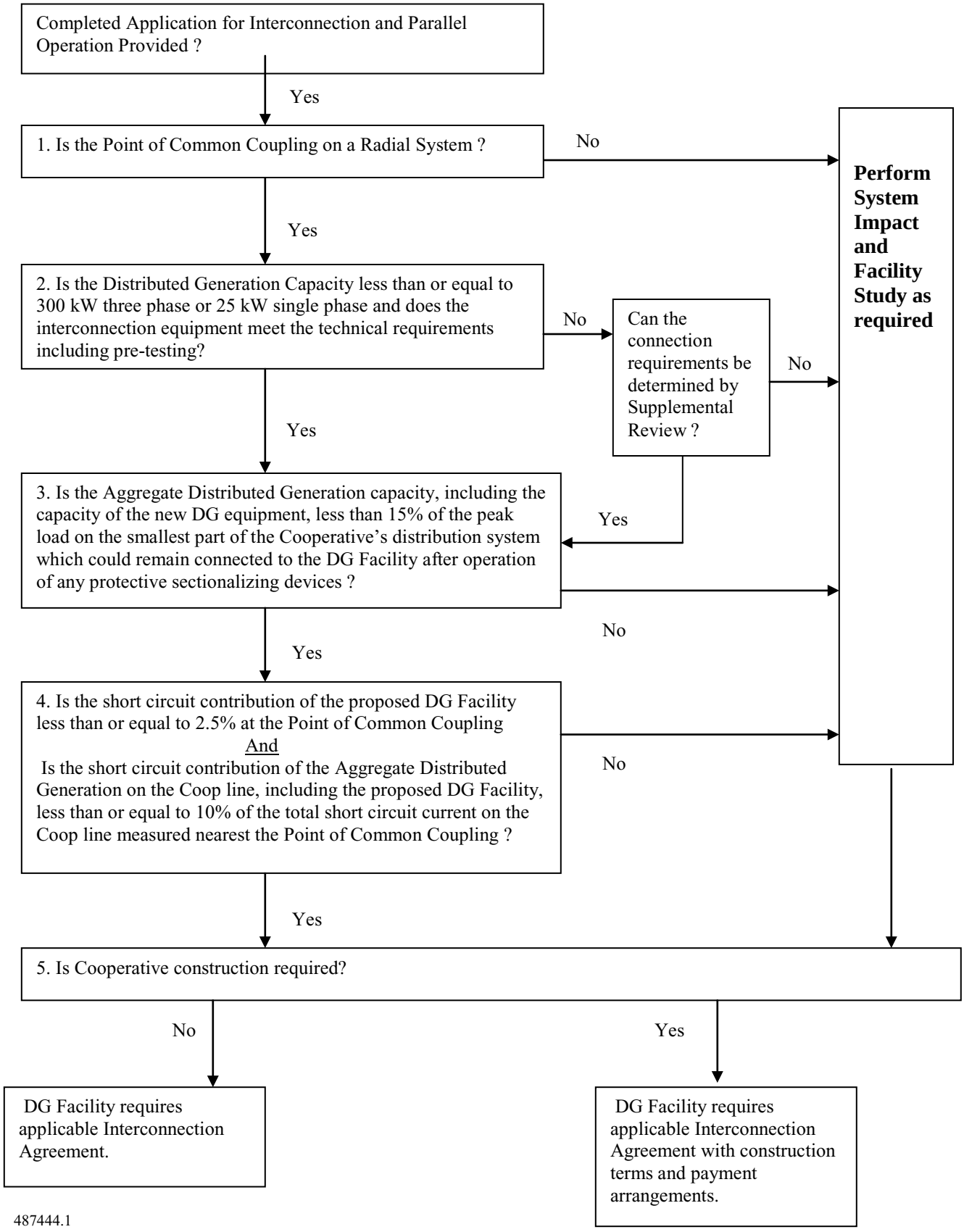
Exhibit 1



Composite curve of voltage flicker studies by General Electric Company, *General Electric Review*, August 1925; Kansas City Power & Light Company, *Electrical World*, May 19, 1934; T&D Committee, EEI, October 24, 1934, Chicago; Detroit Edison Company; West Pennsylvania Power Company; Public Service Company of Northern Illinois.

Relations of Voltage Fluctuations to Frequency of Their Occurrence (Incandescent Lamps)

INTERCONNECTION REQUEST SCREENING PROCESS



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AGREEMENT FOR INTERCONNECTION AND PARALLEL OPERATION OF QUALIFYING COGENERATION OR SMALL POWER PRODUCTION FACILITIES GREATER THAN 25 KW BUT LESS THAN 1 MW

This Agreement ("Agreement") dated as of _____, by and between Firelands Electric Cooperative, Inc., an Ohio nonprofit corporation (the "Power Company"), and _____ (the "Consumer" together with the Power Company, individually, a "Party" and, collectively, the "Parties");

WITNESSETH:

WHEREAS, the Consumer has or will install on the Premises certain Consumer-owned electric generating facilities greater than 25 kW but less than 1 MW in the aggregate, which electric generating facilities are more particularly described in Exhibit E attached hereto; and

WHEREAS, the Electric Generating Facility is a certified qualifying cogeneration or small power production facility under PURPA; and

WHEREAS, the Consumer desires to interconnect the Electric Generating Facility to the Power Company's electric distribution system;

NOW, THEREFORE, in consideration of the mutual promises, covenants and agreements herein contained, the Parties, intending to be legally bound, hereby agree as follows:

ARTICLE 1 -- DEFINITIONS

Capitalized terms used but not defined herein shall have the meanings assigned to such terms in the Agreement for Electric Service. Whenever used in this Agreement, the following terms shall have the following meanings:

"Agreement for Electric Service" shall mean the Agreement for Electric Service of even date herewith between Power Company and the Consumer.

"Buckeye" shall mean Buckeye Power, Inc. and its successors and assigns.

"Electric Generating Facility" shall mean the Consumer's electric generating units identified in Exhibit E hereof, the output of which is greater than 25 kW but less than 1 MW in the aggregate or is reasonably anticipated to exceed the annual electric energy requirements of Consumer's electric consuming facilities located on the Premises.

"Emergency" shall mean a condition or situation (i) that in the judgment of Power Company or Consumer is imminently likely to endanger life or property, (ii) that in the sole judgment of Power Company is imminently likely to adversely affect or impair the Power Company Distribution System or the electrical or transmission systems of others to which the Power Company Distribution System is directly or indirectly connected, including, without

limitation, the transmission system of Transmission Owner, or (iii) that in the sole judgment of the Consumer is imminently likely to adversely affect or impair the Electric Generating Facility.

"Good Utility Practice" shall mean any of the practices, methods and acts engaged in or approved by a significant proportion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at the lowest reasonable cost consistent with reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method or act to the exclusion of all others, but rather to be a spectrum of acceptable practices, methods or acts.

"Interconnection Facilities" shall mean all facilities presently in place or presently proposed to be installed, as identified in Exhibit A hereof, or facilities which are later installed, in order to interconnect the Electric Generating Facility to the Power Company Distribution System, including System Protection Facilities.

"Interconnection Service" shall mean the services provided by the Power Company to interconnect the Electric Generating Facility with the Power Company Distribution System pursuant to the terms of this Agreement.

"Metering Equipment" shall mean the single meter currently installed at the Point of Interconnection or to be installed at the Point of Interconnection as described in Exhibit B hereof.

"NERC" shall mean the North American Electric Reliability Council, and any successor thereto.

"Point of Interconnection" shall mean the point or points, shown in Exhibit A hereof, where the Consumer's Interconnection Facilities interconnect with the Power Company Distribution System.

"Power Company Distribution System" shall mean all electric distribution facilities owned or controlled by Power Company on Power Company's side of the Point of Interconnection, including, without limitation, Power Company's Interconnection Facilities.

"ReliabilityFirst" shall mean ReliabilityFirst Corporation, one of the regional reliability councils of NERC formed to promote reliability and adequacy of bulk power supply of the electric utility systems in North America, and any successor thereto.

"System Protection Facilities" shall mean the equipment required to protect (a) the Power Company Distribution System, the systems of others directly or indirectly connected to the Power Company Distribution System, including, without limitation, the transmission system of Transmission Owner, and Power Company's customers from faults or other electrical disturbances occurring at the Electric Generating Facility or otherwise on Consumer's side of the Point of Interconnection, and (b) the Electric Generating Facility from faults or other electrical disturbances occurring on the Power Company Distribution System or on the systems of others

to which the Power Company Distribution System is directly or indirectly connected, including, without limitation, the transmission system of Transmission Owner.

"Transmission Owner" shall mean _____, owning transmission facilities to which the Power Company Distribution System is interconnected, and its successors and assigns.

"Transmission Provider" shall mean _____, providing transmission service through facilities owned by Transmission Owner, and its successors and assigns.

ARTICLE 2 -- INTERCONNECTION SERVICE

Subject to the terms and conditions of the Agreement for Electric Service and this Agreement, Power Company shall provide Consumer with Interconnection Service for the Electric Generating Facility for the term of the Agreement for Electric Service.

ARTICLE 3 -- OPERATION AND MAINTENANCE

3.1 Operation, Maintenance and Control of the Electric Generating Facility. The Consumer shall own, operate, maintain and control the Electric Generating Facility and Consumer's Interconnection Facilities (a) in a safe and reliable manner, (b) in accordance with Good Utility Practice, (c) in accordance with applicable operational and reliability criteria, protocols, and directives, including those of NERC, ReliabilityFirst, the Power Company, Transmission Owner and Transmission Provider (including, without limitation, those requirements of Power Company set forth in Exhibit C hereof and those requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof), and (d) in accordance with the provisions of this Agreement. Consumer may operate the Electric Generating Facility in parallel and in synchronization with the electric power and energy provided by Power Company to Consumer pursuant to the Agreement for Electric Service, as an auxiliary or supplement to such electric power and energy, and may use the output of the Electric Generating Facility to meet the requirements of Consumer's electric consuming facilities located on the Premises. Any output of the Electric Generating Facility in excess of the requirements of Consumer's electric consuming facilities located on the Premises shall be sold to Buckeye Power, Inc. in accordance with the Agreement to Purchase Power and Energy from Qualifying Cogeneration or Small Power Production Facilities Greater than 25 KW but less than 1 MW of even date herewith between the Consumer and Buckeye Power, Inc. ("Agreement for Purchase of Power and Energy from Qualifying Facility").

3.2 Protection and System Quality. Consumer shall, at its expense, provide, install, own, operate and maintain System Protection Facilities, including such protective and regulating devices as are required by NERC, ReliabilityFirst, the Power Company, Transmission Owner or Transmission Provider, or by order, rule or regulation of any duly-constituted regulatory authority having jurisdiction, or as are otherwise required by Good Utility Practice in order to protect persons and property and to minimize deleterious effects to the Power Company Distribution System and the transmission system of Transmission Owner. Any such protective or regulating devices that may be required on Power Company's or Transmission Owner's facilities in connection with the operation of the Electric Generating Facility shall be installed by Power

Company or Transmission Owner, as the case may be, at Consumer's expense. Power Company reserves the right to modify or expand its requirements for protective devices in conformance with Good Utility Practice, as long as such modifications or expansions of requirements are compatible with the design of the Electric Generating Facility and the Interconnection Facilities.

3.3 Inspection. Power Company shall have the right, but shall have no obligation or responsibility to (a) observe Consumer's tests and inspections of any of Consumer's protective equipment, (b) review the settings of Consumer's protective equipment, and (c) review Consumer's maintenance records relative to the Electric Generating Facility and Consumer's protective equipment. The foregoing rights may be exercised by Power Company from time to time as deemed necessary by the Power Company upon reasonable notice to Consumer. However, the exercise or non-exercise by Power Company of any of the foregoing rights of observation, review or inspection shall be construed neither as an endorsement or confirmation of any aspect, feature, element, or condition of the Electric Generating Facility or Consumer's protective equipment or the operation thereof, nor as a warranty as to the fitness, safety, desirability, or reliability of same.

3.4 Disconnection. Upon termination of the Agreement for Electric Service by its terms, Consumer shall disconnect the Electric Generating Facility from the Power Company Distribution System. Power Company shall have the right to disconnect, or to require the Consumer to disconnect, the Electric Generating Facility immediately and without prior notice if, in the Power Company's sole opinion, an Emergency exists and immediate disconnection is necessary to protect persons or property from injury or damage. Power Company shall have the right to disconnect, or to require the Consumer to disconnect, the Electric Generating Facility with no less than seven days prior notice if, in the Power Company's sole opinion, such disconnection is required in order for the Power Company to conduct maintenance, repairs or replacements of its facilities or the Power Company Distribution System. Consumer shall disconnect the Electric Generating Facility immediately if an Emergency exists and immediate disconnection is necessary to protect persons or property from injury or damage.

ARTICLE 4 -- EMERGENCIES

The Consumer agrees to comply with NERC, ReliabilityFirst, Power Company, Transmission Owner and Transmission Provider Emergency procedures, as applicable, with respect to Emergencies (including, without limitation, those of requirements of the Power Company set forth in Exhibit C hereof and those requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof). The Consumer shall provide the Power Company with oral notification that is prompt under the circumstances of an Emergency which may reasonably be expected to affect the Power Company Distribution System or the transmission system of Transmission Owner, to the extent the Consumer is aware of the Emergency. To the extent the Consumer is aware of the facts of the Emergency, such notification shall describe the Emergency, the extent of the damage or deficiency, its anticipated duration, and the corrective action taken or to be taken, and shall be followed as soon as practicable with written notice. In the event of an Emergency, the party becoming aware of the Emergency may, in accordance with Good Utility Practice and using its reasonable judgment,

take such action as is reasonable and necessary to prevent, avoid, or mitigate injury, danger, damage or loss.

ARTICLE 5 – MODIFICATIONS AND CONSTRUCTION

5.1 Modifications. Either party may undertake modifications to its facilities; provided, that Consumer shall not increase the output of the Electric Generating Facility or make other material change or modification to the configuration or operation of the Electric Generating Facility without the prior written consent of Power Company and Buckeye. In the event that the Consumer plans to undertake a modification that reasonably may be expected to impact the Power Company's facilities, the Consumer shall provide the Power Company and Buckeye with sufficient information regarding such modification so that the Power Company and Buckeye can evaluate the potential impact of such modification prior to commencement of the work.

5.2 Construction.

5.2.1 Land Rights. Consumer shall furnish at no cost to Power Company any necessary access, easements, licenses, and/or rights of way upon, over, under, and across lands owned or controlled by Consumer and/or its affiliated interests for the construction, operation and maintenance by Power Company of necessary lines, substations, and other equipment to accomplish interconnection of the Electric Generating Facility with the Power Company Distribution System under this Agreement and the provision of electric service to the Consumer under the Agreement for Electric Service, and shall, at all reasonable times, give the Power Company, and its agents, free access to such lines, substations, and equipment. An accessible, protected and satisfactory site selected upon mutual agreement by the Parties and located on the Consumer's premises shall be provided by and at the Consumer's expense for installation of necessary metering equipment, unless Power Company elects to install the metering equipment on a location controlled by it.

5.2.2 Electric Generating Facility and Equipment Design and Construction. Consumer shall, at its sole expense, design, construct, and install the Electric Generating Facility and all equipment needed to interconnect the Electric Generating Facility with the Power Company Distribution System, except for any Interconnection Facilities to be constructed by Power Company pursuant to Exhibit A hereof. The Consumer's Interconnection Facilities and equipment shall satisfy all requirements of applicable safety and engineering codes, including the Power Company's, and further, shall satisfy all requirements of any duly-constituted regulatory authority having jurisdiction and the requirements of Transmission Owner and Transmission Provider (including, without limitation, those of requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof). Consumer shall submit all specifications for Consumer's Interconnection Facilities and equipment, including System Protection Facilities, to the Power Company for review at least ninety (90) days prior to interconnecting such Interconnection Facilities and equipment with the Power Company Distribution System. Power Company's review of Consumer's specifications shall be construed neither as confirming nor as endorsing the design, nor as any warranty as to fitness, safety, durability or reliability of Consumer's interconnection facilities or equipment. Power Company shall not, by reasons of such review or failure to review, be responsible for strength, details of design, adequacy or

capacity of Consumer's Interconnection Facilities or equipment, nor shall Power Company's acceptance be deemed to be an endorsement of any facility or equipment. Consumer agrees to make changes to its Interconnection Facilities and equipment as may be reasonably required to meet the requirements of the Power Company. In the event it becomes necessary for Power Company to alter, add to, relocate or rearrange the Interconnection Facilities or to rearrange or relocate existing Power Company-owned facilities which are not Interconnection Facilities to continue to conduct interconnected operations in accordance with Good Utility Practice, then Consumer shall pay for such work.

ARTICLE 6 -- METERING

Power Company shall purchase and install Metering Equipment to meter the electric service provided by the Power Company to the Consumer. Power Company shall own, operate and maintain the Metering Equipment. All costs associated with the purchase, installation, ownership, operation and maintenance of Metering Equipment, as more fully described in Exhibit B hereof shall be borne by Consumer.

ARTICLE 7 -- INFORMATION REPORTING

Consumer shall promptly provide to the Power Company all relevant information, documents, or data regarding the Consumer's facilities and equipment that have been reasonably requested by the Power Company.

ARTICLE 8 -- INDEMNITY AND LIABILITY

Consumer agrees to fully indemnify, release, and hold Power Company, its members, trustees, officers, managers, employees, agents, representatives, and servants, Power Company's affiliated and associated companies, and their respective members, trustees, shareholders, directors, partners, stakeholders, officers, managers, employees, agents, representatives, and servants, and Power Company's successors and assigns, harmless from and against any and all claims, demands, liabilities, losses, damages, costs and expenses (including attorneys' fees and other costs of defense) of any nature or kind whatsoever, including, but not limited to, claims, demands and/or liabilities for personal injury to (including death of) any person whomever (including payments and awards made to employees or others under any workers' compensation law or under any plan for employees' disability and death benefits) and for damage to any property whatsoever (including Consumer's Electric Generating Facility, the Power Company Distribution System, and the transmission system of Transmission Owner) arising out of or otherwise resulting from the use, ownership, maintenance, or operation of the Electric Generating Facility or the Interconnection Facilities, regardless of whether such claims, demands or liability are alleged to have been caused by negligence or to have arisen out of Power Company's status as the owner or operator of facilities involved; provided, however, that the foregoing shall not apply to the extent that any such personal injury or property damage is held to have been caused by the gross negligence or intentional wrongdoing of Power Company or its agents or employees. Neither party shall be liable in statute, contract, in tort (including negligence), strict liability, or otherwise to the other party, its agents, representatives, affiliated and associated companies, or assigns, for any incidental or consequential loss or damage

whatsoever, including, but not limited to, loss of profits or revenue, resulting from any party's performance or non-performance of an obligation imposed on it by this Agreement.

ARTICLE 9 -- INSURANCE

9.1 Consumer shall obtain and maintain the following policies of insurance during the term of this Agreement:

(a) Workers' Compensation Insurance which complies with the laws of the State of Ohio and Employers' Liability insurance with limits of at least $ 1,000,000; and

(b) Comprehensive or Commercial General Liability insurance with bodily injury and property damage combined single limits of at least $5,000,000 per occurrence. Such insurance shall include, but not necessarily be limited to specific coverage for contractual liability encompassing the indemnification provisions in Article 8, broad form property damage liability, personal injury liability, explosion and collapse hazard coverage, products/completed operations liability, and, where applicable, watercraft protection and indemnity liability; and

(c) Excess Umbrella liability insurance with a single limit of at least $5,000,000 per occurrence in excess of the limits of insurance provided in subparagraphs (a), (b), and (c) above.

9.2 The amounts of insurance required in Section 9.1 above may be satisfied by the Consumer purchasing primary coverage in the amounts specified or by buying a separate excess Umbrella Liability policy together with lower limit primary underlying coverage. The structure of the coverage is the Consumer's option, so long as the total amount of insurance meets Power Company's requirements.

9.3 The coverages requested in Section 9.1(b) above and any Umbrella or Excess coverage should be "occurrence" form policies. In the event Consumer has "claims-made" form coverage, Consumer must obtain prior approval of all "claims-made" policies from Power Company.

9.4 Consumer shall cause its insurers to amend its Comprehensive or Commercial General Liability and, if applicable, Umbrella or Excess Liability policies with the following endorsement items (a) through (e); and to amend Consumer's Workers' Compensation, and Auto Liability policies with endorsement item (e):

(a) Power Company, and its directors, officers, and employees are additional Insureds under this Policy; and

(b) This insurance is primary with respect to the interest of Power Company, and its directors, officers, and employees and any other insurance maintained by them is excess and not contributory with this insurance; and

(c) The following cross liability clause is made a part of the policy: "In the event of claims being made by reasons of (i) personal and/or bodily injuries suffered by any employee or employees of one insured hereunder for which another insured hereunder is or may be liable, or (ii) damage to property belonging to any insured hereunder for which another insured is or may be liable, then this policy shall cover such insured against whom a claim is made or may be made in the same manner as if separate policies have been issued to each insured hereunder, except with respect to the limits of insurance; and

(d) Insurer hereby waives all rights of subrogation against Power Company, and its officers, directors and employees; and

(e) Notwithstanding any provision of the policy, this policy may not be canceled, non-renewed or materially changed by the insurer without giving thirty (30) days prior written notice to Power Company. All other terms and conditions of the policy remain unchanged.

9.5 Consumer shall cause its insurers or agents to provide Power Company with certificates of insurance evidencing the policies and endorsements listed above. Failure of Power Company to obtain certificates of insurance does not relieve Consumer of the insurance requirements set forth herein. Failure to obtain the insurance coverage required by this Article 9 shall in no way relieve or limit Consumer's obligations and liabilities under other provisions of this Agreement.

ARTICLE 10 – BUCKEYE, TRANSMISSION OWNER AND TRANSMISSION PROVIDER CONSENT

The consent of Buckeye, the Transmission Owner and/or Transmission Provider, if the Power Company determines that such consent is required, shall be required prior to any interconnection of the Consumer's Electric Generating Facility with the Power Company Distribution System.

ARTICLE 11 – TERM

This Agreement shall begin on _____ and shall continue until the ten year anniversary of the commencement of the term of this Agreement unless extended, terminated or cancelled. This Agreement shall automatically extend for successive periods of one (1) year each, unless either party provides notice of termination at least 90 days prior to the end of the then current term, in which case the Agreement shall terminate at the end of the then current term. Consumer may terminate this Agreement at any time by providing no less than 60 days prior written notice of termination to Power Company. Power Company may terminate this Agreement at any time upon material breach by Consumer of its obligations under this Agreement. This Agreement shall automatically terminate upon the termination of the Agreement for Electric Service or the Agreement for Purchase of Power and Energy from Qualifying Facility.

ARTICLE 12 – MISCELLANEOUS

This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors, legal representatives and assigns; provided, however, this Agreement shall not be assigned by the Consumer without the prior written consent of the Power Company, any such assignment by the Consumer being null and void without such consent. This Agreement shall not be effective unless approved in writing by all governmental agencies from which approval is required. This Agreement shall be governed by and construed in accordance with the laws of the State of Ohio, except for any conflicts of laws provisions. This Agreement may not be modified except in a writing signed by both parties hereto.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first written above.

Firelands Electric Cooperative

By: _____

Name: _____

Title: _____

_____

By: _____

Name: _____

Title: _____

EXHIBIT A
INTERCONNECTION FACILITIES

This Exhibit A is a part of the Agreement for Interconnection and Parallel Operation between Consumer and Power Company.

Point of Interconnection

The point of interconnection will be at the point where _____. See Drawing No. _____, dated _____, which drawing is attached hereto and made a part hereof.

Interconnection Facilities to be Furnished by Power Company

Power Company shall construct the following interconnection facilities:

_____

Interconnection Facilities to be Furnished by Consumer

Consumer shall construct the following interconnection facilities:

_____

Cost Responsibility

Consumer shall be solely responsible for all costs associated with Consumer's construction of Interconnection Facilities.

Consumer and Power Company hereby acknowledge and agree that the cost listed below is only an estimate and that Consumer hereby agrees to and shall reimburse Power Company for all actual costs, including any applicable taxes, associated with the Power Company's construction of Interconnection Facilities as set forth in this Exhibit A. The cost of the Power Company's Interconnection Facilities is estimated to be $_____.

EXHIBIT B
METERING EQUIPMENT

This Exhibit B is a part of the Agreement for Interconnection and Parallel Operation between Consumer and Power Company.

The metering facilities are to be located _____.

Power Company, at Consumer's expense, will purchase, install, own, operate, and maintain the following metering instrumentation as required for on site metering and telemetering:

Metering will be accomplished using a single meter capable of registering the flow of electricity from the Power Company's electric distribution system to Consumer's electric consuming facilities located on the Premises. Maintenance of the meter(s) will be the responsibility of the Power Company, which will own the meter(s).

Consumer and Power Company hereby acknowledge and agree that the cost listed below is only an estimate and that Consumer hereby agrees to and shall reimburse Power Company for all actual costs, including any applicable taxes, associated with the Power Company's installation of Metering Equipment as set forth in this Exhibit B. The cost for the Metering Equipment is estimated to be $_____.

EXHIBIT C
POWER COMPANY REQUIREMENTS

[Cooperative's Rules and Regulations for Qualifying Cogeneration and Small Power Production Facilities and the Cooperative's Technical Guidelines for Interconnection and Parallel Operation]

EXHIBIT D
TRANSMISSION OWNER AND/OR TRANSMISSION PROVIDER REQUIREMENTS

EXHIBIT E
ELECTRIC GENERATING FACILITY DESCRIPTION

AGREEMENT FOR BACK-UP AND SUPPLEMENTARY ELECTRIC SERVICE FOR QUALIFYING CO-GENERATION OR SMALL POWER PRODUCTION FACILITIES GREATER THAN 25 KW BUT LESS THAN 1 MW

This Agreement, made as of the ____ day of _____, 200__, between Firelands Electric Cooperative, Inc., (hereinafter called "the Power Company") and _____ (hereinafter called the "Consumer"), whose mailing address is _____, for electric service at _____ situated generally at the intersection of _____ and _____ in _____, _____ County, Ohio (hereinafter called the "Premises");

WITNESSETH:

WHEREAS, the Power Company is a not-for-profit corporation organized under the laws of the State of Ohio engaged in the business of selling electric power and energy with its principal place of business in _____County, Ohio; and

WHEREAS, the Consumer is [a _____ organized under the laws of the State of _____ doing business in the State of Ohio, which] or [an individual who] owns and operates all land and facilities located on the Premises; and

WHEREAS, the Consumer has or will install on the Premises certain consumer-owned electric generating facilities greater than 25 kW but less than 1 MW in the aggregate, which electric generating facilities (the "Electric Generating Facility") are more particularly described in Exhibit E to the Agreement for Interconnection and Parallel Operation of Qualifying Cogeneration or Small Power Production Facilities Greater Than 25 kW but less than 1 MW of even date herewith by and between the Power Company and the Consumer (the "Agreement for Interconnection and Parallel Operation"); and

WHEREAS, the Electric Generating Facility is a certified qualifying cogeneration or small power production facility under the Public Utility Regulatory Policies Act of 1978, as amended, and all governmental regulations lawfully promulgated thereunder ("PURPA"); and

WHEREAS, the Consumer desires to interconnect the Electric Generating Facility to the Power Company's electric distribution system and to use the output of the Electric Generating Facility to first meet the requirements of the Consumer's electric consuming facilities located on the Premises and then sell to Buckeye Power, Inc. any such output in excess of the requirements of the Consumer's electric consuming facilities under the Agreement for the Purchase of Power and Energy from Qualifying Cogeneration or Small Power Production Facilities Greater than 25 KW but less than 1 MW of even date herewith by and between the Consumer and Buckeye Power, Inc. ("Agreement for Purchase of Power and Energy from Qualifying Facility"); and

WHEREAS, the Power Company desires to sell, and the Consumer desires to purchase, electric power and energy to meet the requirements of Consumer's electric consuming facilities not served by the Electric Generating Facility under the terms and conditions hereinafter set forth; and

WHEREAS, a single meter has been or will be installed at the Premises, which meter is capable of registering the flow of electricity from Power Company's electric distribution system to Consumer's electric consuming facilities on the Premises at the point of interconnection;

NOW, THEREFORE, in consideration of the premises and the mutual covenants herein contained, the parties hereto agree as follows:

1. Subject to the terms and conditions of this Agreement, the Power Company shall sell and deliver to the Consumer, and the Consumer shall purchase and receive, all of the electric power and energy which the Consumer may need at the Premises up to _____ kW, except for any such electric demand and energy which is served by Consumer's Electric Generating Facility.

2. Service hereunder shall be alternating current, _____ phase, _____ cycles, _____ volts.

3. The Consumer shall pay the Power Company for service hereunder at the rate and upon the terms and conditions set forth in the Power Company's Back-Up and Supplementary Electric Service Rate Schedule, which is attached hereto and made a part of this Agreement as if fully restated herein. The Power Company's Back-Up and Supplementary Electric Service Rate Schedule will be superseded by any new or

amended Back and Supplementary Electric Service Rate Schedule or any successor rate schedule as approved from time to time by the Board of Trustees of the Power Company. Payment for the service provided hereunder shall be made at the office of the Power Company located in _____ County, Ohio, or at such other place as the Power Company shall hereafter designate in writing.

4. If the Consumer shall fail to make any such payment within fifteen (15) days after such payment is due, the Power Company may discontinue service to the Consumer upon giving no less than fifteen (15) days written notice to the Consumer of its intention to do so, provided however, that such discontinuance of service shall not relieve the Consumer of any of its obligations under this Agreement.

5. The Consumer is or shall become a member of the Power Company and be bound by such rules and regulations as may from time to time be adopted by the Power Company.

6. The Consumer shall not use the electric power and energy furnished hereunder as an auxiliary or supplement to any other source of electric power and energy and shall not sell or transfer to others the electric power and energy purchased hereunder, without permission of the Power Company; provided, however, that Consumer may operate the Electric Generating Facility upon the terms and conditions and for the purposes set forth in this Agreement, the Agreement for Interconnection and Parallel Operation, and the Power Company's Back-Up and Supplementary Electric Service Rate Schedule which is attached hereto and made a part of this Agreement as if fully restated herein. The Consumer represents and warrants to the Power Company that the Electric Generating Facility is a certified qualifying cogeneration or small power production facility under PURPA.

7. The Consumer shall use the output of the Electric Generating Facility first to meet the requirements of Consumer's electric consuming facilities located on the Premises. Any output of the Electric Generating Facility in excess of the requirements of Consumer's electric consuming facilities shall be sold to Buckeye Power, Inc. in accordance with the Agreement for Purchase of Power and Energy from Qualifying Facility of even date herewith.

8. Whenever the Power Company's facilities located at the Premises are relocated solely to suit the convenience of the Consumer, the Consumer shall reimburse the Power Company for the entire cost incurred in making such change.

9. (a) The Power Company will use reasonable diligence in furnishing a regular and uninterrupted supply of electric power and energy, but does not guarantee uninterrupted service. The Power Company shall not be liable for damages or other losses in case such supply is interrupted, curtailed, reduced, fluctuates, becomes irregular, or fails, or the commencement of service to the Consumer is delayed by reason of an act of God, the public enemy, accidents, labor disputes, orders or acts of civil or military authority, governmental action, loss of power supply, breakdowns or injury to the machinery, transmission or distribution lines or other facilities of the Power Company, repairs, maintenance or any cause beyond the Power Company's control; provided, however, that in no event shall the Power Company be liable for personal injury, wrongful death, property damage or other losses not caused by or due to the gross negligence or willful and wanton misconduct of the Power Company; provided, further, however, that in no event shall the Power Company be liable for consequential damages of any nature whatsoever in case such supply of power and energy should be interrupted, curtailed, reduced, fluctuates, becomes irregular, or fails, or the commencement of service to the Consumer is delayed; and provided further that the failure of the Consumer to receive electric power and energy because of any of the aforesaid conditions shall not relieve the Consumer of its obligation to make payments to the Power Company as provided herein.

(b) The point at which service is delivered by the Power Company to the Consumer, to be known as the "point of interconnection", shall be the point at which the Consumer's electric consuming facilities located on the Premises are connected to the Power Company's electric distribution system. The Power Company shall not be liable for any loss, injury or damage resulting from the Consumer's use of its facilities or equipment or occasioned by the power and energy furnished by the Power Company beyond the point of interconnection.

(c) The Consumer shall provide and maintain suitable protective devices on its equipment to prevent any loss, injury or damage that might result from any fluctuation

or irregularity in the supply of electric power and energy. The Power Company shall not be liable for any loss, injury or damage resulting from any fluctuation or irregularity in the supply of power and energy which could have been prevented by the use of such protective devices.

(d) The Power Company will provide and maintain the necessary lines or service connections, metering and other apparatus which may be required for the proper measurement of and rendition of its service. All such apparatus shall be owned and maintained by the Power Company. A single meter will be installed which shall be capable of registering the flow of electricity from the Power Company's electric distribution system to Consumer's electric consuming facilities located on the Premises at the point of interconnection.

10. In the event of loss or injury to the property of the Power Company through misuse by, or the negligence of, the Consumer or the employees of the same, the cost of the necessary repairs or replacement thereof shall be paid to the Power Company by the Consumer.

Consumer will be responsible for any person tampering with, interfering with, or breaking the seals or meters or other equipment of the Power Company installed at the Premises. The Consumer hereby agrees that no one except the employees of or persons duly authorized by the Power Company shall be allowed to make any internal or external adjustments of any meter or any other piece of apparatus which shall be the property of the Power Company. The Consumer shall provide the Power Company reasonable access at all times to the Power Company's meters and other facilities of the Power Company located on the Premises.

11. Metering equipment used in determining the demand and amount of electric power and energy supplied hereunder shall be tested and calibrated, if required, by the Power Company. If any metering equipment shall be found inaccurate, it shall be restored to the extent possible to a 100.0% accurate condition; or new metering equipment to the extent necessary shall be substituted so that, as far as possible, 100.0% accuracy shall always be maintained. The Consumer shall have the right to request that a special meter test be made at any time. In the event a test made at the Consumer's request discloses that the meter tested is registering correctly, or within one percent (1%)

above or below 100.0% accuracy at full load, Consumer shall bear the expense of such meter test.

The results of all such tests and calibrations shall be open to examination by the Consumer and a report of every requested test shall be furnished to the Consumer. Any meter tested and found to be not more than one percent (1%) above or below 100.0% accuracy at full load, shall be considered to be accurate in so far as correction of billing is concerned. If as a result of any test, any meter is found to register in excess of one percent (1%) above or below 100.0% accuracy at full load, then the readings of such meter previously taken for billing purposes shall be corrected according to the percentage of inaccuracy so found, but no such correction shall extend beyond the last regular monthly billing period occurring prior to the day on which inaccuracy is discovered by such test, and no correction shall be made for a longer period than that during which it may be determined by mutual agreement of the parties involved that the inaccuracy existed. The Power Company will bear the cost of the meter test if any meter is found to register in excess of one percent (1%) above or below 100.0% accuracy at full load.

For any period that metering equipment is found to have failed wholly, or in part, to register and for which no alternate metering is available, it shall be assumed that the demand established, or electric energy delivered, as the case may be, during said period is the same as that for a period of like operation during which such meter was in service and operating.

The Power Company shall notify the Consumer in advance of the time of any meter test so that a representative of the Consumer may be present.

12. Duly authorized representatives of the Power Company shall be permitted to enter the Premises at all reasonable times in order to carry out the provisions hereof.

13. This Agreement shall begin on _____ and shall continue until the ten year anniversary of the commencement of the term of this Agreement unless extended, terminated or cancelled. This Agreement shall automatically extend for successive periods of one (1) year each, unless either party provides notice of termination at least 90 days prior to the end of the then current term, in which case the Agreement shall terminate at the end of the then current term. Consumer may terminate this Agreement at any time by providing no less than 60 days prior written notice of

termination to Power Company. Power Company may terminate this Agreement at any time upon material breach by Consumer of its obligations under this Agreement. This Agreement shall automatically terminate upon the termination of the Agreement for Interconnection and Parallel Operation or the Agreement for Purchase of Power and Energy from Qualifying Facility.

14. (a) This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors, legal representatives and assigns; provided, however, this Agreement shall not be assigned by the Consumer without the prior written consent of the Power Company, any such assignment by the Consumer being null and void without such consent.

(b) This Agreement shall not be effective unless approved in writing by all governmental agencies from which approval is required.

15. This Agreement shall be governed by and construed in accordance with the laws of the State of Ohio, except for any conflicts of laws provisions.

IN WITNESS WHEREOF, the parties have caused this Agreement to be executed by their duly authorized representatives as of the date first written above.

AGREEMENT TO PURCHASE POWER AND ENERGY FROM QUALIFYING COGENERATION OR SMALL POWER PRODUCTION FACILITIES GREATER THAN 25 KW BUT LESS THAN 1 MW

This Agreement ("Agreement") dated as of _____, by and between Buckeye Power, Inc., an Ohio nonprofit corporation ("Buckeye"), and _____, a _____ (the "Operator" together with Buckeye, individually, a "Party", and, collectively, the "Parties");

WITNESSETH:

WHEREAS, the Operator has installed or will install on the Premises certain Operator-owned and/or controlled electric generating facilities greater than 25 kW but less than 1 MW in the aggregate, which electric generating facilities are more particularly described in Exhibit E to the Agreement for Interconnection and Parallel Operation; and

WHEREAS, the Facility is a certified qualifying cogeneration or small power production facility under PURPA; and

WHEREAS, the Operator desires to interconnect the Facility to the Power Company's electric distribution system and use the output of the Facility to first meet the requirements of the Operator's electric consuming facilities located on the Premises and then sell to Buckeye any such output in excess of the requirements of the Operator's electric consuming facilities; and

WHEREAS, the Operator and _____ (the "Power Company") are parties to an Agreement for Back-Up and Supplementary Electric Service of even date herewith ("Agreement for Back-Up and Supplementary Electric Service") relating to the supply by the Power Company of electric power and energy to the Operator's electric consuming facilities located on the Premises and not served by the Facility; and

WHEREAS the Operator and the Power Company are parties to an Agreement for Interconnection and Parallel Operation of even date herewith ("Agreement for Interconnection and Parallel Operation") relating to the interconnection and parallel operation of the Facility with the Power Company's electric distribution system; and

WHEREAS, the Operator desires to sell, and Buckeye desires to purchase, the output of the Facility in excess of the requirements of the Operator's electric consuming facilities located on the Premises, under the terms and conditions hereinafter set forth;

NOW, THEREFORE, in consideration of these premises and of the mutual covenants, representations, warranties and agreements hereinafter set forth, and intending to be legally bound hereby, the Parties agree as follows:

ARTICLE I: Definitions

Capitalized terms used but not defined herein shall have the meanings assigned to such terms in the Agreement for Back-Up and Supplementary Electric Service or the Agreement for Interconnection and Parallel Operation, as appropriate. Whenever the following terms appear in this Agreement, whether in the singular or in the plural, they shall have the applicable meanings stated below:

1.1 "Available Capacity" means that portion of the Facility's Dependable Capacity designated by Operator and made available to Buckeye during a Scheduled Outage.

1.2 "Business Day" means Monday through Friday excluding holidays recognized by Buckeye. As of the date of this Agreement, these holidays include _____. Such holidays may be changed by Buckeye upon ten (10) Days written notice to Operator.

1.3 "Calendar Day or Day" a Calendar Day shall be the 24-hour period beginning and ending at 12:00 midnight. The terms Day and Calendar Day may be used interchangeably and shall have the same definition.

1.4 "Calendar Month or Month" a Calendar Month shall begin at 12:00 midnight on the last Day of the preceding month and end at 12:00 midnight on the last Day of the current Month. The terms Month and Calendar Month may be used interchangeably and shall have the same definition.

1.5 "Calendar Year or Year" a Calendar Year shall be the 12-Month period beginning 12:00 midnight on December 31 and ending at 12:00 midnight on the subsequent December 31. The terms Year and Calendar Year may be used interchangeably and shall have the same definition.

1.6 "Capacity Purchase Price" means the price per kilowatt per month Buckeye will pay Operator for Dependable Capacity of the Facility as delivered from the Facility to Buckeye, in accordance with Section 10.3.

1.7 "Capacity Test Period" means, except for the Initial Capacity Test Period, the period commencing each November 1 and ending at the end of the Day the next October 31. Capacity Test Period includes the Initial Capacity Test Period.

1.8 "Commencement Date" means the first date upon which (a) energy is generated by the Facility and (b) such energy is metered by the Buckeye-owned metering equipment.

1.9 "Dependable Capacity" means the amount of electric generating capacity that the Facility is capable of producing (measured in kW) as determined pursuant to Article XI.

1.10 "Design Limits" means the Facility can change load at the rate of _____ kW per minute over a continuous range down to a minimum of zero (0) kW. Frequency tolerance is ± _____ hertz. Voltage tolerance, without reactive power restrictions, is ± _____%.

1.11 "Dispatch" means the right of Operator to schedule and control, directly or indirectly, manually or automatically, the Facility within its Design Limits to a Dispatch Level.

1.12 "Dispatch Level" means either (a) the Facility's Dependable Capacity, (b) Available Capacity, or (c) the Dispatch specified by Buckeye during an Emergency, Low Load Period, or pursuant to Section 7.4(a).

1.13 "Emergency" means a condition or situation which in the sole judgment of either Buckeye or NERC affects or will affect Buckeye's or the Power Company's ability to meet their obligations to maintain safe, adequate and continuous electric service to Buckeye's or the Power Company's customers and/or the customers of any member of NERC.

1.14 "Energy Purchase Price" means the price per kilowatt-hour Buckeye will pay Operator for Net Electric Output delivered to Buckeye in accordance with Section 10.1.

1.15 "Environmental Attributes" means the renewable attributes, including any emission reduction credits or emission allowances, of the Facility during the Term of this Agreement, subject to the representations, warranties, covenants and agreements of the Operator set forth in Section 6.6 of this Agreement.

1.16 "Environmental Attributes Purchase Price" means the price per kilowatt-hour Buckeye will pay Operator for the Environmental Attributes of the Facility delivered to Buckeye in accordance with Section 10.2.

1.17 "FERC" means the Federal Energy Regulatory Commission or any successor thereto.

1.18 "Facility" means Operator's Qualifying Facility, including auxiliary equipment and equipment installed on Operator's side of the Interconnection Point that is not Interconnection Facilities. The Facility is more particularly described in Exhibit E to the Agreement for Interconnection and Parallel Operation.

1.19 "Forced Outage" means an unplanned or uncontrolled event that causes a reduction or cessation in Net Electrical Output below 95% of the Dispatch Level.

1.20 "Initial Capacity Test Period" means the period commencing on the Commencement Date and ending on the last Day of October following the first full Summer Season completed after the Commencement Date.

1.21 "Interconnection Facilities" means all of the interconnection facilities and metering as described in the Agreement for Interconnection and Parallel Operation.

1.22 "Interconnection Point" means the physical point(s) where the Facility and the electric distribution system of the Power Company are connected.

1.23 "Interest" means the compensation for the accrual of monetary obligations under this Agreement computed monthly and prorated daily from the time each such obligation arises based on an annual interest rate equal to the Prime Rate plus two (2) percent. For purposes hereof, Prime Rate shall mean the rate of interest from time to time published in the "Money Rates" section of the Wall Street Journal as the prime rate, determined for each obligation to pay interest, at the time such obligation arises.

1.24 "Low Load Period" means periods of time when Buckeye, at its sole discretion, determines that the demand for energy on the Power Company's electric distribution system is so low that Buckeye may Dispatch the Facility to a reduced level or off-line.

1.25 "Metering Facilities" means all the metering and telemetering equipment necessary for Buckeye to measure the Net Electrical Output and Dependable Capacity of the Facility, wherever located.

1.26 "NERC" means the North American Electric Reliability Council, including any successor thereto and subdivisions thereof.

1.27 "Net Electric Output" means the Facility's electrical generating output (measured in KWHs by Buckeye-owned Metering Facilities) in excess of the requirements of the Operator's electric consuming facilities located on the Premises.

1.28 "Prudent Electrical Practices" means the practices, methods and use of equipment required to protect Buckeye's and the Power Company's systems, employees, agents, and customers from malfunctions occuring at the Facility and to protect the Facility, and Operator's employees and agents at the Facility, from malfunctions occuring on Buckeye's or the Power Company's systems or on any other electric utility with which Buckeye or the Power Company is directly or indirectly electrically connected.

1.29 "Prudent Utility Practices" means the practices generally followed by the electric utility industry, as changed from time to time, which generally include, but are not limited to, engineering and operating considerations.

1.30 "PURPA" means the Public Utility Regulatory Policies Act of 1978, as amended, and all governmental regulations lawfully promulgated thereunder.

1.31 "Qualifying Facility" or "QF" means a cogeneration facility or a small power production facility which is a Qualifying Facility under PURPA.

1.32 "Scheduled Outage" means a planned cessation or reduction of the Net Electrical Output below the Dependable Capacity of the Facility that (a) has been submitted in advance to Buckeye and the Power Company, and (b) is required for inspection, preventive maintenance and corrective maintenance.

1.33 "Summer Season" means the Months of June, July, August and September.

1.34 "Term" means the initial Term of this Agreement as specified in Section 5.1 plus any renewal Term determined pursuant to Section 5.2.

ARTICLE II: Sale and Purchase of Energy, Environmental Attributes, and Capacity

2.1 Subject to the terms and conditions of this Agreement, Operator agrees to sell, and Buckeye agrees to purchase, the Net Electrical Output of the Facility during the Term.

2.2 Subject to the terms and conditions of this Agreement, Operator agrees to sell, and Buckeye agrees to purchase, the Environment Attributes of the Facility during the Term. Buckeye shall have the sole and exclusive right to designate the Facility as a renewable resource during the Term to satisfy any federal, state or local renewable energy requirement, renewable energy procurement requirement, renewable energy portfolio standard, or other renewable energy mandate.

2.3 Subject to the terms and conditions of this Agreement, Operator agrees to sell, and Buckeye agrees to purchase, Dependable Capacity from the Facility during the Term.

2.4 Notwithstanding anything in this Agreement to the contrary, and without limiting any other obligations of Operator in this Agreement, Buckeye's obligation to purchase Net Electric Output, Environmental Attributes, and Dependable Capacity from Operator at the rates specified in Article X is contingent upon Operator's submittal to Buckeye of all the following:

(a) Evidence satisfactory to Buckeye that the Operator is and will be the owner of the Facility during the Term of this Agreement and/or that Operator has the right to operate and control and obtain the output of the Facility during the Term of this Agreement.

(b) A copy of the feasibility study regarding the Facility as prepared by a consultant nationally recognized as an expert in the preparation of such studies, which for the purpose of this Agreement demonstrates to the satisfaction of Buckeye that the Facility, if operated and maintained in accordance with Prudent Electrical and Utility Practices, can be reasonably expected to have a useful life at least equal to the Term.

(c) A copy of the certificate of a mutually acceptable independent engineering firm stating that the Facility has been constructed in compliance with the terms of this Agreement and the information submitted pursuant to Section 2.3(b).

(d) A copy of the Qualifying Facility certificate.

(e) Certificates of insurance coverages or insurance policies required by Article XII.

(f) Copies of all permits, licenses and approvals required under Section 4.1.

(g) Payment for Metering Facilities as described in Section 8.6, and evidence of payment for the Power Company's Interconnection Facilities as described in the Agreement for Interconnection and Parallel Operation.

(h) All documents required pursuant to Section 4.2.

(i) The licenses and grants of other access rights to be provided by Operator to Buckeye pursuant to Section 8.7 and evidence of the licenses and grants of other access rights to be provided by Operator to the Power Company pursuant to the Agreement for Interconnection and Parallel Operation.

(j) A copy of the fully executed and delivered Agreement for Interconnection and Parallel Operation, and Agreement for Back-Up and Supplementary Electric Service, with the Power Company.

ARTICLE III: Notices

3.1 Any notice or communication required to be in writing hereunder shall be given by any of the following means: registered, certified, or first class mail, telex, telecopy, by hand, or telegram. Such notice or communication shall be sent to the respective Parties at the address listed below. Except as expressly provided herein, any notice shall be deemed to have been given when sent. Any notice given by first class mail shall be considered sent at the time of posting. Communications by telex, telecopy, or telegram shall be confirmed by depositing a copy of the same in the post office for transmission by registered, certified or first class mail in an envelope properly addressed as follows:

In the case of Operator to:

In the case of Buckeye to:

Buckeye Power, Inc.
6677 Busch Boulevard
Columbus, Ohio 43229
Tel. (614) 846-5757
Fax. (614) 846-7108

3.2 Either Party may, by written notice to the other, change the representative or the address to which such notices and communications are to be sent.

ARTICLE IV: Pre-Operation Period

4.1 Operator shall, at its expense, acquire, and maintain in effect, from the FERC and from any and all other federal, state and local agencies, commissions and authorities with jurisdiction over Operator and/or the Facility, all permits, licenses, and approvals, and complete or have completed all environmental impact studies necessary (a) for the construction, operation

and maintenance of the Facility, (b) for Operator to perform its obligations under this Agreement, and (c) to obtain or maintain certification as a Qualifying Facility.

4.2 Upon the execution of this Agreement, Operator shall submit for Buckeye's and the Power Company's review its construction, start-up and testing schedules for the Facility. Operator shall thereafter submit progress reports in a form reasonably satisfactory to Buckeye and the Power Company on the first Day of every Month until the Commencement Date and notify Buckeye of any changes to such schedules in a timely manner. Buckeye and the Power Company shall have the right to monitor the construction, start-up and testing of the Facility, and Operator shall cooperate with Buckeye and the Power Company to ensure that the Facility's Power generation equipment and switchgear are designed and installed so that the Facility can safely and successfully operate in parallel with the Power Company's system. Operator shall cooperate in such physical inspections of the Facility as may be reasonably required by Buckeye and the Power Company during and after completion of construction. Buckeye's and the Power Company's technical review and inspection of the Facility shall not be deemed as endorsing the design thereof nor as any warranty of the safety, durability or reliability of the Facility.

4.3 Operator, Buckeye and the Power Company shall endeavor to prepare a written operations procedure no later than sixty (60) Days prior to the Commencement Date. Such procedure shall include, without limitation, specific details of who is responsible for each area of operation of the Facility and the Interconnection Facilities.

4.4 Buckeye shall prepare and submit to Operator a written voltage schedule consistent with the Design Limits of the Facility no later than thirty (30) Days prior to the Commencement Date, except that Buckeye may change such voltage schedule within the Design Limits of the Facility upon thirty (30) Days prior written notice. Operator shall use such voltage schedule in the operation of its Facility. This voltage schedule shall be based on the normally expected operating conditions for the Facility and the reactive Power requirements of the Power Company's system.

4.5 Operator shall notify Buckeye and the Power Company of the Commencement Date in writing no less than two (2) weeks prior to that date. Buckeye, Operator and the Power Company shall cooperate in scheduling the Commencement Date, and Buckeye and the Power Company shall have the right to have representatives present at such time. Buckeye reserves the right to delay the Commencement Date due to problems with the Facility which could have a material adverse effect on Buckeye's or the Power Company's operations. In such event, Buckeye shall give Operator notice of such problems and Operator shall remedy any such problems with facilities or equipment which Operator installed or maintains.

ARTICLE V: Term and Termination

5.1 The Term of this Agreement shall begin on _____ and shall continue until the ten year anniversary of the commencement of the Term of this Agreement unless extended under this Article V, terminated, or canceled. If the Term is extended under this Article V, the word "Term" shall thereafter be deemed to mean the original Term so extended.

5.2 This Agreement shall automatically extend for successive periods of one (1) year each, unless either Party provides notice of termination at least ninety (90) days prior to the end of the then current Term, in which case the Agreement shall terminate at the end of the then current Term.

5.3 If either Party defaults under this Agreement, then the defaulting Party shall be given sixty (60) Days from the receipt of written notice stating that such a default exists from the non-defaulting Party to cure such default, providing that if the default cannot be cured within sixty (60) Days with the exercise of reasonable diligence, the non-defaulting party shall grant an additional period of one hundred twenty (120) Days in which to cure such default. If the defaulting Party fails to cure such default within such prescribed period, then the non-defaulting Party may, in addition to any other rights or remedies available at law or in equity, immediately terminate this Agreement and consider defaulting Party in material breach of its obligations under this Agreement. Conditions which shall be considered defaults by Operator under this Section 5.3 include without limitation:

(a) abandonment of construction or operation of the Facility at any time, or failure to reach the Commencement Date within 30 months after the date of this Agreement unless excused by Force Majeure as specific in Article XIV, or failure of the Facility to produce Net Electrical Output during any period of six consecutive months during the Term of this Agreement; or

(b) Attempts by Operator, its employees, contractors or subcontractors of any tier, to operate, maintain, or tamper with the Power Company's Interconnection Facilities or Buckeye's Metering Facilities without the prior written consent of Buckeye or the Power Company, as applicable, except, however, where (i) such actions by Operator are performed solely to prevent immediate injury or death to persons or damage to property, and (ii) Operator uses its best efforts to notify Buckeye or the Power Company, as applicable, of the need for such actions in advance. The foregoing shall not be construed as relieving Operator from any other obligations under this Agreement or liabilities resulting from such actions; or

(c) Material breach by Operator of its obligations under this Agreement, the Agreement for Interconnection and Parallel Operation, or the Agreement for Back-Up and Supplementary Electric Service.

5.4 Operator may terminate this Agreement at any time by providing no less then 60 days prior written notice of termination to Buckeye.

5.5 Buckeye may terminate this Agreement if Operator shall: (a) admit in writing its inability to pay its debts as such debts become due; (b) make a general assignment or an arrangement or composition with or for the benefit of its creditors; (c) fail to controvert in a timely and appropriate manner, or acquiesce in writing to, any petition filed against Operator under any bankruptcy or similar law; (d) take any action for the purpose of effecting any of the foregoing, and shall fail to cure any of the actions or failures within sixty (60) days.

5.6 Buckeye may terminate this Agreement if a proceeding or case shall be commenced, without the application or consent of Operator, in any court of competent jurisdiction, seeking (a) its liquidation, reorganization of its debts, its dissolution or winding-up, or the composition or readjustment of its debts, (b) the appointment of a receiver, custodian, liquidator or the like of Operator or of all or any substantial part of its assets, or (c) similar relief in respect of Operator under any law relating to bankruptcy, insolvency, reorganization of its debts, winding-up, composition or adjustment of debts, and such proceeding or case shall continue undismissed, or an order, judgment or decree approving or ordering any of the foregoing shall be entered and continue unstayed and in effect, for a period of sixty (60) days.

5.7 This Agreement shall automatically terminate upon the termination of the Agreement for Interconnection and Parallel Operation or the Agreement for Back-Up and Supplementary Electric Service.

ARTICLE VI: Representation and Warranties

6.1 Operator warrants that the Facility will be operated and maintained in accordance with Prudent Electrical and Utility Practices, including without limitation, synchronizing, voltage and reactive Power control.

6.2 Operator warrants that the Facility will be operated in such a manner so as not to have an adverse effect on Buckeye's or the Power Company's voltage level or voltage waveform.

6.3 Operator warrants that the Facility will be operated at the voltage levels determined pursuant to Section 4.4 provided such levels are within the Design Limits of the Facility.

6.4 Each Party shall, at all times, conform to all applicable laws, ordinances, rules and regulations applicable to it. Each Party shall give all required notices, shall procure and maintain all governmental permits, licenses and inspections necessary for its performance of this Agreement, and shall pay all charges and fees in connection therewith.

6.5 (a) Any fines or other penalties incurred by Operator or its agents, employees or subcontractors for noncompliance by Operator , its employees, or subcontractors with laws, rules, regulations or ordinances shall not be reimbursed by Buckeye but shall be the sole responsibility of Operator. If fines, penalties or legal costs are assessed against Buckeye by any government agency or court due to noncompliance by Operator with any of the laws, rules, regulations or ordinances referred to in Section 6.4 above or any other laws, rules, regulations or ordinances with which compliance is required herein, or if the work of Operator or any part thereof is delayed or stopped by order of any government agency or court due to Operator's noncompliance with any such laws, rules, regulations or ordinances, Operator shall indemnify and hold harmless Buckeye against any and all losses, liabilities, damages, and claims suffered or incurred because of the failure of Operator to comply therewith. Operator shall also reimburse Buckeye for any and all legal or other expenses (including attorneys' fees) reasonably incurred by Buckeye in connection with such losses, liabilities, damages or claims.

(b) Any fines or other penalties incurred by Buckeye or its agents, employees or subcontractors for noncompliance by Buckeye with laws, rules, regulations or ordinances shall not be reimbursed by Operator but shall be the sole responsibility of Buckeye. If fines, penalties or legal costs are assessed against Operator by any government agency or court due to noncompliance by Buckeye with any of the laws, rules, regulations or ordinances referred to in Section 6.4 above or any other laws, rules, regulations or ordinances with which compliance is required herein, or if the work of Buckeye or any part thereof is delayed or stopped by order of any government agency or court due to Buckeye's noncompliance with any such laws, rules, regulations or ordinances, Buckeye shall indemnify and hold harmless Operator against any and all losses, liabilities, damages, and claims suffered or incurred because of the failure of Buckeye to comply therewith. Buckeye shall also reimburse Operator for any and all legal or other expenses (including attorneys' fees) reasonably incurred by Operator in connection with such losses, liabilities, damages or claims.

6.6 The Operator represents and warrants to Buckeye that:

(a) The Operator is and will be the owner of the Facility during the Term of this Agreement and/or that Operator has or will have the right to operate and control and obtain the output of the of the Facility during the Term of this Agreement.

(b) The Facility's Energy Information Administration or Qualifying Facility identification number is _____.

(c) The fuel type used by the Facility to produce electric power and energy is _____.

(d) To the best of Operator's knowledge, the Environmental Attributes of the Facility during the Term have not been sold, marketed or otherwise claimed by a third party.

(e) Operator has not and will not sell the Environmental Attributes of the Facility during the Term to any person or entity other than Buckeye.

(f) The Environmental Attributes of the Facility during the Term have not been and will not be used by Operator, nor to the best knowledge of the Operator by any other person or entity, to meet any federal, state or local renewable energy requirement, renewable energy procurement requirement, renewable energy portfolio standard, or other renewable energy mandate.

(g) The Environmental Attributes produced at the Facility during the Term will be produced from the Net Electrical Output.

(h) Operator has not and will not use any emission allowances associated with the Environmental Attributes of the Facility during the Term for compliance with any applicable cap and trade or other emission control system or program.

(i) If required, applicable regulatory authorities have been notified of the intent of the Operator to sell the Environmental Attributes of the Facility during the Term, and Operator has also agreed to report the revenue associated with such sales to applicable regulatory authorities. Appropriate documentation of this notification is attached to this Agreement.

(j) To the best knowledge of the Operator, no notification to any local environmental authority is required for Operator to sell the Environmental Attributes of the Facility during the Term.

ARTICLE VII: Control and Operation of the Facility; Dispatching

7.1 Operator shall, at least one hundred and eighty (180) Days prior to the Commencement Date submit a written operation and maintenance schedule for the first year of the Facility's operations. Thereafter, Operator shall submit to Buckeye, in writing, by _____ of each Year, its Scheduled Outage periods and operating plan for the next Calendar Year. Buckeye shall accept the Operator's Scheduled Outage periods and operating plan provided that Operator shall not plan Scheduled Outages of the Facility during the Summer Season. Upon at least two weeks notice to Buckeye, Operator may request Buckeye's approval to change any Scheduled Outage period and Buckeye shall not unreasonably withhold such approval.

7.2 Buckeye shall have the right, upon six (6) months prior written notice, to revise the Months during which Operator shall not, unless mutually agreed, schedule a maintenance shutdown.

7.3 Each Party shall keep complete and accurate records and all other data required by each of them for the purposes of proper administration of this Agreement.

(a) All such records shall be maintained for a minimum of five (5) Years after the creation of such record or data and for any additional length of time required by regulatory agencies with jurisdiction over the Parties. Operator shall not dispose of or destroy any such records even after the five (5) years without prior notice to Buckeye.

(b) Operator shall maintain an accurate and up-to-date operating log for the Facility with records of: real and reactive Power production for each clock hour, changes in operating status, Scheduled Outages and Forced Outages and any unusual conditions found during inspections.

(c) Either Party shall have the right from time to time, upon fourteen (14) Days written notice to the other Party to examine the records and data of the other Party relating to this Agreement any time during the period the records are required to be maintained.

7.4 Subject to Section 7.11, Operator shall control and operate the Facility, provided that Buckeye shall have the right to Dispatch the Facility to any level, including off-line, during the period specified in subsections (a) and (b) below:

(a) If it is necessary to modify the Dispatch Level in Buckeye's sole discretion in order to construct, install, maintain, repair, replace, remove, investigate, inspect or test any part of the Facility or the Interconnection Facilities, or any other affected part of Buckeye's or the Power Company's system. Buckeye shall provide Operator with at least forty-eight (48) hours prior notice for any Dispatch associated with this Section 7.4(a). Any reduction required of Operator, or work to be performed by Buckeye, hereunder shall be implemented and completed as soon as possible consistent with Prudent Utility Practices.

(b) A Low Load Period or an Emergency exists.

7.5 If Buckeye Dispatches the Facility pursuant to Section 7.4, then Operator shall cause the Facility to respond to such Dispatch within its Design Limits.

7.6 Operator shall employ qualified personnel for monitoring the Facility and for coordinating operations of the Facility with Buckeye's and the Power Company's system.

7.7 The Parties recognize that Buckeye is a member of NERC and that, to ensure continuous and reliable electric service, Buckeye operates its system in accordance with the operating criteria and guidelines of NERC. If an Emergency is declared, Buckeye will notify Operator's personnel and, if requested by Buckeye, Operator's personnel shall place the Net Electrical Output within the exclusive control of Buckeye for the duration of such Emergency. Without limiting the generality of the foregoing, Buckeye may require Operator's personnel to raise or lower production of Net Electrical Output generated by the Facility to maintain safe and reliable load levels and voltages on the Power Company's distribution system; provided, however, any changes in the level of the Net Electrical Output required of Operator hereunder shall be implemented in a manner consistent with safe operating procedures and within the Facility's Design Limits.

7.8 Operator shall cooperate with Buckeye in establishing Emergency plans, including without limitation, recovery from a local or widespread electrical blackout; voltage reduction in order to effect load curtailment; and other plans which may arise. The Operator shall make technical references available concerning start-up times, black-start capabilities and minimum load-carrying ability.

7.9 Operator shall, during an Emergency supply such Net Electrical Output up to 1 MW as the Facility is able to generate and Buckeye is able to receive. If Operator has a Scheduled Outage, and such Schedule Outage occurs or would occur coincident with an Emergency, Operator shall make all good faith efforts to reschedule the outage or, if the outage has begun, expedite the completion thereof.

7.10 Operator shall operate the Facility with its speed governors and voltage regulators in-service whenever the Facility is connected to or operated in parallel with the Power Company distribution system.

7.11 Whenever Operator Dispatches the Facility to either the Dependable Capacity or the Available Capacity, the Facility may deliver Net Electrical Output in excess of either the Dependable Capacity or Available Capacity, but not to exceed 1 MW.

ARTICLE VIII: Interconnection and Metering Facilities

8.1 Operator shall be responsible for the design, construction, installation, operation, maintenance and ownership of the Facility and Operator's Interconnection Facilities under the Agreement for Interconnection and Parallel Operation.

8.2 Buckeye shall be responsible for the design, construction, installation, operation, maintenance and ownership of the Metering Facilities, except that Buckeye shall coordinate with Operator the design, construction, installation, operation and maintenance of any Metering Facilities installed on Operator's property.

8.3 Power Company shall be responsible for the design, construction, installation, operation, maintenance and ownership of its Interconnection Facilities under the Agreement for Interconnection and Parallel Operation.

8.4 Within sixty (60) Days of the execution of this Agreement, Operator shall provide to Buckeye (1) a functional one-line diagram of the Facility showing at least the generator(s), protective relay functions, step-up transformers and circuit breakers that they propose to install on Operator's side of the Interconnection Point and (2) a site plat showing the exact location of the proposed site.

8.5 If Buckeye determines that the Buckeye-owned Metering Facilities to be installed on each generating unit (which may include current and potential transformers and telemetering equipment) should be installed on Operator's property, Operator shall be responsible for the installation of, and payment for, such Metering Facilities. The installation of any Buckeye-owned Metering Facilities on Operator's side of the Interconnection Point shall be subject to Buckeye's approval, which approval shall not be unreasonably withheld.

8.6 Operator shall reimburse Buckeye for the cost of the Metering Facilities installed by Buckeye.

8.7 Operator agrees to grant or have granted to Buckeye all necessary rights of way, easements, and adequate continuing access rights on property of Operator or on the Facility site and sufficient to install, operate, maintain, replace and/or remove the Metering Facilities located on property of Operator or on the Facility site. Prior to the construction by Buckeye of the Metering Facilities, Operator agrees to execute such other grants, deeds or documents as Buckeye may require to record such rights of way, easements, or other grants. Consideration for such grants, deeds or documents shall be the execution of this Agreement and no other consideration shall be required. Operator agrees that all rights of way, easements, or other grants shall survive termination or expiration of this Agreement. If any part of Buckeye's equipment is to be installed on property outside the Facility site which is not owned by Operator, Buckeye shall obtain from the owners thereof all necessary rights of way and easements, for the

construction, operation, maintenance, replacement, and/or removal of Buckeye's equipment upon such property in accordance with its usual practices at a cost to be paid by the Operator.

8.8 In the event it becomes necessary for Buckeye to alter, add to, relocate or rearrange the Metering Facilities, then Operator shall pay for such work.

8.9 The Operator shall interconnect the Facility to the Power Company's electric distribution system in accordance with the terms of the Interconnection and Parallel Operation Agreement.

8.10 The Operator shall purchase back-up and supplementary power and energy from the Power Company in accordance with the terms of the Agreement for Back-Up and Supplementary Electric Service.

ARTICLE IX: Metering

9.1 Buckeye shall own and maintain all meters and metering devices (including remote terminal units) used to measure the delivery and receipt of energy, or energy and Dependable Capacity, for payment purposes. Nothing in this Agreement shall prevent Operator from installing meters and metering devices for backup purposes.

9.2 Operator shall provide at its expense, for the purpose of telemetering, a telecommunication circuit to Buckeye. In addition, the Operator shall provide, at its expense, a voice telephone extension for the purpose of maintenance of the telemetering equipment. Such telecommunication circuit and voice telephone extension shall be subject to the approval of Buckeye, which approval shall not unreasonably be withheld.

9.3 All meters and metering equipment used to determine the electric energy, or energy and Dependable Capacity, delivered to Buckeye shall be sealed, and the seals broken only by Buckeye personnel when the meters are to be inspected, tested, or adjusted. Buckeye shall give Operator two (2) weeks prior written notice thereof and Operator shall have the right to be present.

9.4 On a regular schedule and, in addition, upon two (2) weeks prior written notice by Operator, Buckeye will test the meter(s). Operator may have a representative present during any metering inspection, test, or adjustment. When, as a result of such a test, a meter is found to be not more than two (2) percent fast or slow because of incorrect calibration or tampering, no adjustment will be made in the amount paid to Operator for energy and Environmental Attributes, or energy, Environmental Attributes, and Dependable Capacity, delivered to Buckeye. If the meter is found to be more than two (2) percent fast or slow, Buckeye will calculate the correct amount delivered to Buckeye for the actual period during which inaccurate measurements were made or, if the actual period cannot be determined to the mutual satisfaction of the Parties, for a period equal to one-half of the time elapsed since the most recent test, but in no case for a period in excess of twelve (12) Months. The previous payments by Buckeye for this period shall be subtracted from the amount of payments that are calculated to have been owned under this Agreement. The difference shall be offset against or added to the next

payment to either Party as appropriate under this or other Agreements between the Parties. The percentage registration of a meter will be calculated by the "weighted average" of light load and full load, which is calculated by giving a value of one (1) to the light load and a value of four (4) to the full load.

9.5 Whenever it is found that, for any reason other than incorrect calibration or tampering, the metering apparatus has not registered the true amount of electricity which has been delivered by Operator to Buckeye, the electricity delivered during the entire period of incorrect registration shall be estimated, and the amount of electricity so estimated will be used in calculating the corrected amounts to be paid to Operator. The adjustment amount will be for the actual period during which inaccurate measurements were made or, if the actual period cannot be determined to the mutual satisfaction of the Parties, for a period equal to one-half of the time elapsed since the most recent test of the metering apparatus, but in no case for a period in excess of twelve (12) months. Any overpayments or under payments by Buckeye for energy and Environmental Attributes, or energy, Environmental Attributes, and Dependable Capacity, delivered by Operator to Buckeye shall be corrected in the manner described in Section 9.4.

ARTICLE X: Compensation, Payment and Billings

10.1 Beginning with the first billing period after the Commencement Date, Buckeye shall pay Operator the Energy Purchase Price for Net Electrical Output received by Buckeye from the Facility each Month as follows:

(a) The Energy Purchase Price shall be the sum of (i) the current excess energy fuel and emission allowances charge for such Month as determined by Buckeye, representing generally the cost of Buckeye's incremental fuel and emission allowances allocated by Buckeye to its excess energy sales and (ii) the current non-fuel energy charge for such Month as determined by Buckeye, representing generally the non-fuel variable cost of Buckeye's generation resources without margin (this is currently equal to the energy charge under Buckeye's interruptible rate schedule).

(b) The Energy Purchase Price shall be increased by _____ percent to adjust for the effect of the Facility on Buckeye's system losses. Buckeye shall redetermine such adjustment at least sixty (60) Days prior to a change in the transmission line voltage of the Interconnection Facilities.

(c) For each billing period, the hourly Energy Purchase Price shall be applied to the Net Electrical Output in the corresponding hour and the sum of the product of such hourly Energy Purchase Price times the corresponding hourly Net Electrical Output for each hour of the Month shall yield the total billing period payment for Net Electrical Output.

10.2 Beginning with the first billing period after the Commencement Date, Buckeye shall pay Operator the Environmental Attributes Purchase Price for the Environmental Attributes received by Buckeye from the Facility each Month as follows:

(a) The Environmental Attributes Purchase Price shall be $_____ per kilowatt-hour subject to adjustment as set forth in Section 10.2(b).

(b) The Environmental Attributes Purchase Price shall be adjusted on the first Day of each Capacity Test Period after the Initial Capacity Test Period. On such date the Environmental Attributes Purchase Price shall be adjusted in accordance with the following formula:

> Adjusted Environmental Attributes Purchase Price = the product of (i) $0.002 per kilowatt-hour, multiplied by (ii) the ratio of the GDP-IP Index October Previous Year/GDP-IP Index _____.
>
> Where:
>
> "Adjusted Environmental Attributes Purchase Price" means the Environmental Attributes Purchase Price as adjusted in accordance with this Section 10.2(b).
>
> "GDP-IP Index October Previous Year" equals the published GDP-IP Index value in October of the Capacity Test Period immediately preceding the Capacity Test Period for which the adjustment is due.
>
> "GDP-IP Index _____" equals the published GDP-IP Index value for _____.
>
> "GDP-IP Index" means the final published Implicit Price Deflator for Gross Domestic Product as determined quarterly and reported monthly by the Bureau of Economic Analysis of the U.S. Department of Commerce in the publication "Survey of Current Business". In the event this index is discontinued or its basis is substantially modified, the Parties shall agree on a substitute index.

(c) For each billing period, the hourly Environmental Attributes Purchase Price shall be applied to the Net Electrical Output in the corresponding hour and the sum of the product of such hourly Environmental Attributes Purchase Price times the corresponding hourly Net Electrical Output for each hour of the Month shall yield the total billing period payment for Environmental Attributes.

10.3 Beginning with the first billing period after the Commencement Date, Buckeye shall pay Operator the Capacity Purchase Price for Dependable Capacity received by Buckeye from the Facility each Month as follows:

(a) The Capacity Purchase Price shall equal the current excess demand charge for such Month as determined by Buckeye, representing generally the fixed costs of Buckeye's generation resources without margin (this is currently equal to the excess demand charge under Buckeye's interruptible rate schedule).

(b) For each billing period, the monthly Capacity Purchase Price shall be applied to the Dependable Capacity for such month and the sum of the product of such monthly

Capacity Purchase Price times the corresponding Dependable Capacity for such Month shall yield the total billing period payment for Dependable Capacity.

10.4 Buckeye shall receive a monthly credit to reflect all reasonable costs incurred by Buckeye for meter reading and billing. The monthly meter reading and billing credit is initially $_____ per billing month.

10.5 Meters shall be read, and bills rendered, according to the meter reading and billing schedule established by Buckeye except that not more than forty-five (45) Days shall pass between readings and billing dates. Payment for the energy and Environmental Attributes, or energy, Environmental Attributes, and Dependable Capacity, delivered to Buckeye during the billing period shall be made within twenty-eight (28) Days of the billing date. Interest shall accrue on the outstanding payments due Operator commencing on the twenty-ninth (29) Day after the billing date. However, any amounts due Buckeye, or other amounts due Buckeye arising out of this Agreement, shall be offset against the amounts due to Operator and the net result shall be paid to the appropriate Party within twenty-eight (28) Days of the billing date.

Payment to Buckeye shall be made by wire transfer to the following account:

Payment to Operator shall be made by wire transfer to the following account:

Either Party may, by written notice to the other, change the account to which such checks should be sent.

ARTICLE XI: Testing and Capacity Ratings

11.1 During the Initial Capacity Test Period, the Dependable Capacity of the Facility during each Month of the Initial Capacity Test Period shall equal the following:

$$\frac{Y}{5}$$

where

Y= The sum of the hourly integrated kW output of the Facility at the hour of Buckeye's system peak demand during such Month and at the hour of each of the next four highest Buckeye system demands during such Month. In the event that any of such hours occurs during a Schedule Outage or a Forced Outage, including a Forced Outage caused by an event of Force Majeure, the Dependable Capacity of the Facility shall nevertheless be determined during such hours.

11.2 For each Capacity Test Period other than the Initial Capacity Test Period, the Facility shall be rerated as described below in this Section 11.2, and the Dependable Capacity of the Facility during each Month of the Capacity Test Period shall equal the following:

$$\frac{Z}{20}$$

where

Z = The sum of the hourly integrated kW output of the Facility at the hour of Buckeye's system peak demand during the immediately preceding Summer Season and at the hour of each of the next nineteen highest Buckeye system demands during such Summer Season. In the event that any of such hours occurs during a Schedule Outage or a Forced Outage, including a Forced Outage caused by an event of Force Majeure, the Dependable Capacity of the Facility shall nevertheless be determined during such hours.

Notwithstanding the above, the Dependable Capacity of the Facility shall not exceed 1 MW except by mutual agreement of the Parties.

ARTICLE XII: Insurance

12.1 Operator shall obtain and maintain the following policies of insurance during the term of this Agreement:

(a) Workers' Compensation Insurance which complies with the laws of the State of Ohio and Employers' Liability insurance with limits of at least $ 1,000,000; and

(b) Comprehensive or Commercial General Liability insurance with bodily injury and property damage combined single limits of at least $5,000,000 per occurrence. Such insurance shall include, but not necessarily be limited to specific coverage for contractual liability encompassing the indemnification provisions in Article XIII, broad form property damage liability, personal injury liability, explosion and collapse hazard coverage, products/completed operations liability, and, where applicable, watercraft protection and indemnity liability; and

(c) Excess Umbrella liability insurance with a single limit of at least $5,000,000 per occurrence in excess of the limits of insurance provided in subparagraphs (a), (b), and (c) above.

12.2 The amounts of insurance required in Section 12.1 above may be satisfied by the Operator purchasing primary coverage in the amounts specified or by buying a separate excess Umbrella Liability policy together with lower limit primary underlying coverage. The structure of the coverage is the Operator's option, so long as the total amount of insurance meets Buckeye's requirements.

12.3 The coverages requested in Section 12.1(b) above and any Umbrella or Excess coverage should be "occurrence" form policies. In the event Operator has "claims-made" form coverage, Operator must obtain prior approval of all "claims-made" policies from Buckeye.

12.4 Operator shall cause its insurers to amend its Comprehensive or Commercial General Liability and, if applicable, Umbrella or Excess Liability policies with the following endorsement items (a) through (e); and to amend Operator's Workers' Compensation, and Auto Liability policies with endorsement item (e):

(a) Buckeye, and its directors, officers, and employees are additional Insureds under this Policy; and

(b) This insurance is primary with respect to the interest of Buckeye, and its directors, officers, and employees and any other insurance maintained by them is excess and not contributory with this insurance; and

(c) The following cross liability clause is made a part of the policy: "In the event of claims being made by reasons of (i) personal and/or bodily injuries suffered by any employee or employees of one insured hereunder for which another insured hereunder is or may be liable, or (ii) damage to property belonging to any insured hereunder for which another insured is or may be liable, then this policy shall cover such insured against whom a claim is made or may be made in the same manner as if separate policies have been issued to each insured hereunder, except with respect to the limits of insurance; and

(d) Insurer hereby waives all rights of subrogation against Buckeye, and its officers, directors and employees; and

(e) Notwithstanding any provision of the policy, this policy may not be canceled, non-renewed or materially changed by the insurer without giving thirty (30) Days prior written notice to Buckeye. All other terms and conditions of the policy remain unchanged.

12.5 Operator shall cause its insurers or agents to provide Buckeye with certificates of insurance evidencing the policies and endorsements listed above. Failure of Buckeye to obtain certificates of insurance does not relieve Operator of the insurance requirements set forth herein. Failure to obtain the insurance coverage required by this Article XII shall in no way relieve or limit Operator's obligations and liabilities under other provisions of this Agreement.

ARTICLE XIII: Liability and Noncompliance

13.1 Neither Party shall hold the other Party (including its corporate affiliates, parent, subsidiaries, directors, officers, employees and agents) liable for any claims, losses, costs and expenses of any kind or character (including, without limitation, loss of earnings and attorneys' fees) on account of damage to property of Buckeye or Operator in any way occurring incident to, arising out of, or in connection with a Party's performance under this Agreement, except as provided in Section 13.2 below.

13.2 Operator and Buckeye agree to indemnify and hold each other harmless from and against all claims, demands, losses, liabilities and expenses (including reasonable attorneys' fees) for personal injury or death to persons and damage to each other's property or facilities or the

property of any other person or corporation to the extent arising out of, resulting from or caused by their negligent or intentional acts, errors or omissions or breach of this Agreement.

13.3 Should Operator or any of its affiliates ever desire to dispose of its right, title, or interest in the Facility (hereinafter called "Transfer Interest") except in connection with the sale and leaseback of the Facility to provide financing for the Facility, the exercise of remedies in connection with the debt financing of the Facility, or the transfer of the Facility to an affiliate or subsidiary of the Operator to whom Operator is assigning this Agreement, Operator will offer to sell such Transfer Interest to Buckeye at its fair market value. If Buckeye agrees to purchase the Transfer Interest and there is disagreement as to the fair market value of the Transfer Interest, then either Party shall be entitled to submit the dispute to a panel of three arbitrators in accordance with the Rules of the American Arbitration Association. Each of the Parties would pick one arbitrator and the two arbitrators would pick the third arbitrator. The decision of the arbitrators would be binding upon the Parties. The expenses of such arbitration, excluding attorneys' fees, shall be equally divided among the Parties. The arbitration shall be held in Columbus, Ohio, or such other place as the Parties may mutually agree. The arbitrators shall initiate the hearing as promptly and expeditiously as possible after their selections (and both Parties shall cooperate to this end) and shall conclude the hearings within thirty (30) Days of their commencement unless the arbitrators expressly find that additional time is necessary for completion of the hearings for reasons in the best interest of the Parties. The award of the arbitrators shall be made no later than thirty (30) Days from the date of the closing of the hearings.

13.4 Neither Party shall be liable to the other Party for indirect, incidental, or consequential damages arising out of its failure to meet its obligations under this Agreement, irrespective of the causes thereof, including fault or negligence. Except as otherwise limited by the terms hereof and notwithstanding the above waiver of indirect, incidental or consequential damages, each Party to this Agreement shall be liable for direct damages to the other Party caused by its negligence or willful misconduct in connection with or arising out of this Agreement, and for any other obligations to pay damages to, or to reimburse or indemnify the other Party as expressly set forth in this Agreement.

ARTICLE XIV: Force Majeure

14.1 Neither Party shall be responsible or liable for, or deemed in breach hereof because of any delay in the performance of their respective obligations hereunder due solely to circumstances beyond the reasonable control of the Party experiencing such delay, including but not limited to acts of God; unusually severe weather conditions; strikes or other labor difficulties; war; riots; requirements, actions or failures to act on the part of governmental authorities preventing performance; inability despite due diligence to obtain required licenses; accident; fire; damage to or breakdown of necessary facilities; or transportation delays or accidents (such causes hereinafter called "Force Majeure"); provided that:

(a) The non performing Party gives the other Party within forty-eight (48) hours written notice describing the particulars of the occurrence;

(b) The suspension of performance is of no greater scope and of no longer duration than is required by the Force Majeure;

(c) The non-performing Party uses its best efforts to remedy its inability to perform;

(d) When the non-performing Party is able to resume performance of its obligations under this Agreement, that Party shall give the other Party written notice to that effect; and

(e) The Force Majeure was not caused by or connected with any negligent or intentional acts, errors, or omissions, or failure to comply with any law, rule, regulation, order or ordinance or for any breach or default of this Agreement.

14.2 The term Force Majeure does not include changes in market conditions or governmental action that affect the cost or availability of Operator's supply of fuel or any alternate supplies of fuel or the demand for Operator's products.

14.3 Notwithstanding the above, a Forced Outage that is caused by an event of Force Majeure under this Article XIV shall not excuse the determination of the Facility's Dependable Capacity in accordance with Article XI.

14.4 Except as otherwise provided, in no event will any condition of Force Majeure extend this Agreement beyond its stated Term. If any condition of Force Majeure delays a Party's performance for a time period greater than one hundred eighty (180) Days, the Party not delayed by such Force Majeure may terminate this Agreement without further obligation; provided, however, that if the Force Majeure cannot be overcome within such one hundred eighty (180) Days with the exercise of reasonable diligence, the Party not delayed shall grant a reasonable additional period of time in which to overcome such Force Majeure.

ARTICLE XV: Taxes

All present or future federal, state, municipal or other lawful taxes payable by reason of the sale or purchase of Net Electrical Output, Environmental Attributes, or Dependable Capacity under this Agreement shall be paid by Operator.

ARTICLE XVI: Choice of Law

This Agreement shall be interpreted, construed and governed by the laws of the State of Ohio, except for any such laws that would cause the laws of another state to govern the interpretation and construction of this Agreement. The Parties hereby submit to the jurisdiction of courts located in, and venue is hereby stipulated to be in the State of Ohio.

ARTICLE XVII: Miscellaneous Provisions

17.1 Buckeye recognizes that Operator may be required to assign certain rights under this Agreement to a financing institution or entity providing funding for the Facility as a condition of financing. Notwithstanding the foregoing, neither Party shall assign this Agreement

or any portion thereof without the prior written consent of other Party which consent shall not be unreasonably withheld; provided, however, such consent shall not be required prior to an assignment to a parent, subsidiary or affiliated corporation; but provided, further that: (i) any assignee other than a financing institution providing funding for the Facility shall expressly assume assignor's obligations hereunder; (ii) no such assignment shall impair any security given by Operator hereunder; and (iii) unless expressly agreed by the other Party, no assignment, whether or not consented to, shall relieve the assignor of its obligations hereunder in the event its assignee fails to perform.

17.2 This Agreement can be amended only by agreement between the Parties in writing.

17.3 The failure of either Party to insist in any one or more instances upon strict performance of any provisions of this Agreement, or to take advantage of any of its rights hereunder, shall not be construed as a waiver of any such provisions or the relinquishment of any such right or any other right hereunder, which shall remain in full force and effect.

17.4 The headings contained in this Agreement are used solely for convenience and do not constitute a part of the Agreement between the Parties hereto, nor should they be used to aid in any manner in the construction of this Agreement.

17.5 This Agreement is intended solely for the benefit of the Parties hereto. Nothing in this Agreement shall be construed to create any duty to, or standard of care with reference to, or any liability to, any person not a Party to this Agreement.

17.6 This Agreement shall not be interpreted or construed to create an association, joint venture, or partnership between the Parties or to impose any partnership obligation or liability upon either Party. Neither Party shall have any right, power or authority to enter into any agreement or undertaking for, or act on behalf of, or to act as or be an agent or representative of, or to otherwise bind, the other Party.

17.7 Cancellation, expiration or earlier termination of this Agreement shall not relieve the Parties of obligations that by their nature should survive such cancellation, expiration or termination, including without limitation, warranties, remedies, promises of indemnity and confidentiality.

ARTICLE XVIII: Entirety

This Agreement is intended by the Parties as the final expression of their agreement and is intended also as a complete and exclusive statement of the terms of their agreement with respect to the Net Electrical Output, Environmental Attributes, and Dependable Capacity sold and purchased hereunder. All prior written or oral understandings, offers or other communications of every kind pertaining to the sale of Net Electrical Output, Environmental Attributes, and Dependable Capacity hereunder to Buckeye by Operator are hereby abrogated and withdrawn.

Appendix C: Utility Interconnection Agreements (cont.)

First Energy Short Form Application

FirstEnergy Short Form Interconnection Application

For Interconnection of Certified Inverter Based Generation Equipment
(Eligible for a Level 1, 1.1 or 1.2 Review - Fifty Kilowatts or Smaller)
To the Electric Distribution System of the

Select Utility

Intended to be completed & approved prior to procurement & installation.[1]

Legal Name and Mailing Address of Customer-Generator: (if an Individual, Individual's Name)

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Mailing Address (If other than Above): _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Alternative Contact Information: (if different from Customer-Generator above)

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

The Customer-Generator Facility Information:

Facility Address: _____

City: _____ State: OH Zip Code: _____

Nearest Crossing Street: _____

Account #: _____ Meter #: _____

Current Annual Energy Consumption: _____ kWh Estimated In-service Date: _____

Existing Service Rating: _____ Amps Voltage Rating: _____ Volts Number of Phases: Select

Energy Source: Select Source _____ Source Rating: _____ kW Source Voltage: _____ V

Inverter Type; Select Type _____ Manufacturer: _____

Model Number of Inverter: _____ Number of Units[2]: _____

Inverter Rating: _____ kW_{AC} Ampere Rating: _____ Amps $_{AC}$ Number of Phases: Select

Voltage Rating: _____ V_{AC}, Power Factor: _____ %, Frequency: _____ Hz

IEEE1547/UL1741 Certified[3] Select Total System Type Tested Select

Installation Test Plan attached: Select Manufacturer's Maintenance Schedule attached: Select

Do you plan to export power? Select [4]

If Yes, Estimated Maximum: _____ kW_{AC}, Estimated Gross Annual Energy Production: _____ kWh

Consulting Engineer or Installation Contractor: (Indicate by owner if applicable)

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Connection & Location of Generation & Protective Interface Equipment:

Location of Utility Accessible Lockable Disconnect: Select

One-line Diagram Attached (Required): Select Site Plan Attached (Required): Select

Application Fee:[5] Enclosed: Select $Amount (Checks may be made payable to FirstEnergy Corporation)

Electric Utility Account Customer Signature: I hereby certify that, to the best of my knowledge, all the information provided in the Interconnection Application is true and correct.

By: _____ Title: _____
(Signature) (Type or Print)

Name: _____ Date; _____
(Type or Print)

Return Completed Application to the appropriate Operating Company office:

The Toledo Edison Company	The Illuminating Company:	Ohio Edison Company:
e-mail: TE_interconnection@firstenergycorp.com Postal mail: Toledo Edison Company Attn: TE Interconnection 6099 Angola Rd Holland, OH 43528	e-mail: CEI_interconnection@firstenergycorp.com Postal Mail: Cleveland Electric Illuminating Company Attn: CEI Interconnection 6896 Miller Rd Brecksville, OH 44141	e-mail: OE_interconnection@firstenergycorp.com Postal mail: Ohio Edison Company Building 1 Attn: OE Interconnection 1910 W Market St Akron, OH 44313

[1] **An application is a complete application when it provides all applicable and correct information required below. Additional information to evaluate a request for Interconnection may be required pursuant to the application review process after the application is deemed complete. The customer assumes all financial and operational risk associated with the procurement & installation of equipment prior to acceptance by the electric distribution company.**

[2] **Attach additional sheets as necessary in the event of multiple units of various types/sizes**

[3] **The applicant is encouraged to provide evidence of IEEE1547/UL1741 Test Certification with this application, and may be required to do so in the event such evidence is not readily accessible to the EDC.**

[4] **If net-metering is anticipated, a Net Energy Metering Rider – Application for Service should be submitted with this application.**

[5] **The Applicant may be required to deposit a refundable application fee which shall be reconciled to actual costs calculated to the nearest 1/10 of an hour as approved by the State Commission. Otherwise, the Applicant may be billed for actual costs the after the installation of the generating equipment.**

Appendix C: Utility Interconnection Agreements (cont.)

First Energy Standard Application

FIRSTENERGY INTERCONNECTION APPLICATION

For an Expedited Level 2 and Standard Level 3 Review - Generation Up To 20 MW [1]

(To be filled out and submitted prior to installation)

CUSTOMER GENERATOR CONTACT INFORMATION

Legal Name and Mailing Address of Customer-Generator: (if an Individual, Individual's Name)

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Mailing Address (If other than Above): _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Alternative Contact Information: (if different from Customer-Generator above)

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

The Customer-Generator Facility's Information:

Facility Address: _____

City: _____ State: OH Zip Code: _____

Nearest Crossing Street: _____

Electric Distribution Company ("EDC"): Select Utility _____

Account #: _____ Meter #: _____

Existing Service Voltage: _____ VAC Existing Service Capacity: _____ Amps Select Phase

Current Annual Energy Consumption: _____ kWh Estimated In-service Date: _____

Do you plan to export power? [2] Select _____

If Yes, Estimated Maximum: _____ kW_{AC}, Estimated Gross Annual Energy Production: _____ kWh

One-line Diagram Attached (Required): Select Site Plan Attached (Required): Select

Energy Source: Select _____ Gross Generator Rating: _____ kW_{AC}

Utility Accessible Disconnect: Select _____

Requested Level of Review: Select Type of Generation Equipment: Select

Level 2: Expedited Review - Certified, Inverter-based generation, Up to 2 MW - Page No 3

Level 3: Standard Review - Rotating Equipment or Inverter based generation that does not meet the requirements for Level 2 Review - Page No 3 or 4

Equipment Installation Contractor: **Indicate by owner if applicable** ☐

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Electrical Contractor: (If Applicable) **Indicate if not applicable** ☐

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Consulting Engineer: (If Applicable) **Indicate if not applicable** ☐

Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Contact Person (If other than Above): _____

Telephone (Daytime): _____ (Evening): _____

Facsimile Number: _____ E-Mail Address: _____

Application Fee:

The Applicant shall deposit a not refundable application fee which is approved by the Commission and is listed on the EDC's Website[3]. Depending on the level of review and nature of the energy generating equipment, additional study and review fees, as permitted by Ohio regulations may be required and are not a part of the aforementioned application fee. Application Fee Enclosed: Select Amount: _____

Customer-Generator Signature:

I hereby certify that to the best of my knowledge, all of the information provided in this Application is accurate.

Legal Name of Customer-Generator: _____

Customer-Generator Signature: _____ Date: _____

Printed Name: _____ Title: _____

[1] Customers proposing to install generation greater than 2,000 kW are required to contact their EDC for the appropriate application procedures.

[2] If net-metering is anticipated, a Net Energy Metering Rider – Application for Service should be submitted with this application.

[3] The currently approved fees are:

Level 2 - $50 + $1 per kW of the nameplate rating of the inverter(s)

Level 3 – 100 + $2 per kW of the gross nameplate rating of the generating equipment

FIRSTENERGY INTERCONNECTION APPLICATION

Customer-Generator Equipment Information for Inverter Based Systems

(May be applicable to a Level 2 or 3 Review)

DC Source information;

Energy Source: Select _____

DC Source Rating: _____ kW_{DC}

Nominal DC Voltage: _____ V_{DC}

Ampere Rating: _____ $Amps_{DC}$

Inverter Information:

Inverter Manufacturer: _____

Inverter Type; Select Type _____

Model Number of Inverter: _____

Number of Units[1]: _____

Inverter Rating: _____ kW_{AC}

Voltage Rating: _____ $Volts_{AC}$

Ampere Rating: _____ $Amps_{AC}$

Power Factor: _____ %,

Number of Phases:Select

Frequency: _____ Hz,

IEEE1547/UL1741 Certification[2]: Select

Evidence of Certification attached: Select

[1] **Attach additional sheets as necessary in the event of multiple units of various types/sizes**

[2] **The applicant is encouraged to provide evidence of IEEE1547/UL1741 Test Certification with this application, and may be required to do so in the event such evidence is not readily accessible to the EDC.**

FIRSTENERGY INTERCONNECTION APPLICATION

Customer-Generator Equipment Information for Parallel Rotating Equipment Based Systems (May be applicable to a Level 3 Review)

It is anticipated that many projects proposing to utilize directly coupled rotating generation may not have the specific information necessary for the EDC to adequately evaluate the impact of the proposed facility on the EDC's electrical distribution system at the time of the initial application. Often times the equipment for which this information is needed hasn't been specified. The type information necessary may be conveyed during a scoping meeting or other correspondence early on during the project development. Depending on the nature of the project, this is often an iterative process. Different EDC's analytical systems may require that data be provided conforming to specific standard formats which will be conveyed by the EDC. While not all inclusive, examples of the information commonly required are as follows:

For Synchronous Machines: Copies of the Saturation Curve and the Vee Curve - Salient vs. Non-Salient - Torque: (lb-ft) - Rated RPM - Field Amperes at rated generator voltage and current and % PF over-excited - Maximum Leading and Lagging Reactive Output Power - Type of Exciter - Output Power of Exciter - Type of Voltage Regulator - Direct-axis Synchronous Reactance (Xd) ohms - Direct-axis Transient Reactance (X'd) ohms - Direct-axis Sub-transient Reactance (X"d) ohms - Rated Nominal Frequency

For Induction Machines: Rotor Resistance (Rr) ohms - Exciting Current (Amps) - Rotor Reactance (Xr) (ohms) - VARs (No Load) - Magnetizing Reactance (Xm) - Stator Resistance (Rs) - VARs (Full Load) - Stator Reactance (Xs) – Short Circuit Reactance (X"d) - Number of Phases - Frame Size - Design Letter - Temp. Rise ^{o}C

Protective Equipment: The Customer Generator shall design a protective scheme that will provide the protective functions specified in IEEE 1547 and submit it to the EDC for review & acceptance. The submittal shall include a single line drawing showing the location of instrument transformers (current and voltage) and the location of the relays, breakers and fuses. Indicate the manufacturer and model number of each type of device. Breaker data shall include continuous and interrupting ampere ratings. If relays are used, indicate function, the tripping source and its voltage.

Isolation Transformer: Manufacturer - Manufacturer reference number - Nominal Voltage Ratio – High / Low Voltage Taps - Number of Units - Rated kVA – Percentage Impedance @ kVA base – High / Low Voltage Winding Configuration

Appendix C: Utility Interconnection Agreements (cont.)

Hancock Rural Electric Agreements are available for download at the following web address: http://www.hwe.coop/renewableenergy.htm

Appendix C: Utility Interconnection Agreements (cont.)

Lorain Medina Rural Electric Interconnection Application

ATTACHMENT 1

APPLICATION FOR DISTRIBUTED RESOURCE

Return Completed Application to: Lorain-Medina Rural Electric Cooperative, Inc.
22898 West Road
P O Box 158
Wellington, OH 44090

Customer's Name: _____

Address: _____

Contact Person: _____

Telephone Number: _____

Service Point Address: _____

Information Prepared and Submitted By: _____
(Name and Address) _____

The following information shall be supplied by the Customer or Customer's designated representative. All applicable items must be accurately completed in order that the Customer's generating facilities may be effectively evaluated for interconnection with the Cooperative's Distribution System.

GENERATOR

Number of Units: _____

Manufacturer: _____

Type (Synchronous, Induction, or Inverter): _____

Fuel Source Type (Solar, Natural Gas, Wind, etc.): _____

Kilowatt Rating (95 F at location) _____

Kilovolt-Ampere Rating (95 F at location): _____

Power Factor: _____

Voltage Rating: _____

Ampere Rating: _____

Number of Phases: _____

Frequency: _____

Do you plan to interconnect the generator and operate in parallel with the Cooperative's electric distribution facilities?: _____ Yes _____ No

If Yes, do you plan to export power?: _____ Yes _____ No

If Yes, maximum amount expected:_____

If Yes, do you expect the amount of exported energy to exceed your requirements for electric energy at the service address on an annual basis?: _____ Yes _____ No

Estimated annual requirements for electric energy at the service address: _____ Kilowatt-hours

Do you plan to use the output of the facility to serve your electric load? _____ Yes _____ No

Do you plan to retain, or sell to the Cooperative or its parent, the generator's environmental attributes (i.e. renewable energy credits)? _____ Retain _____ Sell

Expected Energizing and Start-up Date_____

Normal Operation: (examples: provide power to meet base load, demand

management, standby, back-up, other) (please describe)_____

One-line diagram attached: _____ Yes

Have testing results been supplied to the Cooperative documenting conformance with the Cooperative's technical requirements: _____ Yes [Note: Requires a Yes for complete Application.]

Have all necessary government permits and approvals been obtained for the project prior to this application: _____ Yes [Note: Requires a Yes for an Application to be considered complete.]

Has the generator been certified as a qualifying cogeneration or small power production facility under the Public Utility Regulatory Policies Act of 1978: _____ Yes [Note: Generator must be certified as a qualifying cogeneration or small power production facility to export power.]

Have the generator manufacturer machine characteristics been supplied to the Company:

_____ Yes [Note: Requires a Yes for complete Application.]

Layout sketch showing lockable, "visible" disconnect device: ____ Yes

Application fee:_____Yes $_____

Checks are payable to: Lorain-Medina Rural Electric Cooperative, Inc.

_____ at _____

DATE:

[CUSTOMER NAME]

By: _____
(Signature)

Name: _____

Title: _____

Appendix C: Utility Interconnection Agreements (cont.)

Lorain Medina Rural Electric Interconnection Agreement

ATTACHMENT 6

AGREEMENT FOR INTERCONNECTION AND PARALLEL OPERATION OF A NET METERED QUALIFYING COGENERATION OR SMALL POWER PRODUCTION FACILITY

OPERATED BY _____,
OPERATOR OF A _____ FACILITY
AT _____, NEAR _____, OHIO

This Agreement ("Agreement") dated as of _____, by and between Lorain-Medina Rural Electric Cooperative, Inc., an Ohio nonprofit corporation (the "Power Company"), and _____ (the "Consumer" together with the Power Company, individually, a "Party" and, collectively, the "Parties");

WITNESSETH:

WHEREAS, the Consumer has or will install on the Premises certain Consumer-owned electric generating facilities of approximately ___ kW in the aggregate, which electric generating facilities are more particularly described in Exhibit E attached hereto; and

WHEREAS, the Electric Generating Facility is a certified qualifying cogeneration or small power production facility under PURPA; and

WHEREAS, the Consumer desires to interconnect the Electric Generating Facility to the Power Company's electric distribution system;

NOW, THEREFORE, in consideration of the mutual promises, covenants and agreements herein contained, the Parties, intending to be legally bound, hereby agree as follows:

ARTICLE 1 – DEFINITIONS

Capitalized terms used but not defined herein shall have the meanings assigned to such terms in the Agreement for Electric Service. Whenever used in this Agreement, the following terms shall have the following meanings:

"Agreement for Electric Service" shall mean the Agreement for Electric Service of even date herewith between Power Company and the Consumer.

"Buckeye" shall mean Buckeye Power, Inc. and its successors and assigns.

"Electric Generating Facility" shall mean the Consumer's electric generating units identified in Exhibit E hereof, the output of which is approximately _____ kW in the aggregate, but which shall not exceed [25] [OR] [100] kW in the aggregate, and which facility is not reasonably anticipated to exceed the annual electric energy requirements of Consumer's electric consuming facilities located on the Premises..

"Emergency" shall mean a condition or situation (i) that in the judgment of Power Company or Consumer is imminently likely to endanger life or property, (ii) that in the sole judgment of Power Company is imminently likely to adversely affect or impair the Power Company Distribution System or the electrical or transmission systems of others to which the Power Company Distribution System is directly or indirectly connected, including, without limitation, the transmission system of Transmission Owner, or (iii) that in the sole judgment of the Consumer is imminently likely to adversely affect or impair the Electric Generating Facility.

"Good Utility Practice" shall mean any of the practices, methods and acts engaged in or approved by a significant proportion of the electric utility industry during the relevant time period, or any of the practices, methods and acts which, in the exercise of reasonable judgment in light of the facts known at the time the decision was made, could have been expected to accomplish the desired result at the lowest reasonable cost consistent with reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method or act to the exclusion of all others, but rather to be a spectrum of acceptable practices, methods or acts.

"Interconnection Facilities" shall mean all facilities presently in place or presently proposed to be installed, as identified in Exhibit A hereof, or facilities which are later installed, in order to interconnect the Electric Generating Facility to the Power Company Distribution System, including System Protection Facilities.

"Interconnection Service" shall mean the services provided by the Power Company to interconnect the Electric Generating Facility with the Power Company Distribution System pursuant to the terms of this Agreement.

"Net Metering Equipment" shall mean the single bi-directional meter or pair of meters currently installed at the Point of Interconnection or to be installed at the Point of Interconnection as described in Exhibit B hereof.

"NERC" shall mean the North American Electric Reliability Council, and any successor thereto.

"Point of Interconnection" shall mean the point or points, shown in Exhibit A hereof, where the Consumer's Interconnection Facilities interconnect with the Power Company Distribution System.

"Power Company Distribution System" shall mean all electric distribution facilities owned or controlled by Power Company on Power Company's side of the Point of Interconnection, including, without limitation, Power Company's Interconnection Facilities.

"ReliabilityFirst" shall mean ReliabilityFirst Corporation, one of the regional reliability councils of NERC formed to promote reliability and adequacy of bulk power supply of the electric utility systems in North America, and any successor thereto.

"System Protection Facilities" shall mean the equipment required to protect (a) the Power Company Distribution System, the systems of others directly or indirectly connected to the Power Company Distribution System, including, without limitation, the transmission system of Transmission Owner, and Power Company's customers from faults or other electrical disturbances occurring at the Electric Generating Facility or otherwise on Consumer's side of the Point of Interconnection, and (b) the Electric Generating Facility from faults or other electrical disturbances occurring on the Power Company Distribution System or on the systems of others to which the Power Company Distribution System is directly or indirectly connected, including, without limitation, the transmission system of Transmission Owner.

"Transmission Owner" shall mean _____, owning transmission facilities to which the Power Company Distribution System is interconnected, and its successors and assigns.

"Transmission Provider" shall mean _____, providing transmission service through facilities owned by Transmission Owner, and its successors and assigns.

ARTICLE 2 – INTERCONNECTION SERVICE

Subject to the terms and conditions of the Agreement for Electric Service and this Agreement, Power Company shall provide Consumer with Interconnection Service for the Electric Generating Facility for the term of the Agreement for Electric Service.

ARTICLE 3 – OPERATION AND MAINTENANCE

3.1 Operation, Maintenance and Control of the Electric Generating Facility. The Consumer shall own, operate, maintain and control the Electric Generating Facility and Consumer's Interconnection Facilities (a) in a safe and reliable manner, (b) in accordance with Good Utility Practice, (c) in accordance with applicable operational and reliability criteria, protocols, and directives, including those of NERC, ReliabilityFirst, the Power Company, Transmission Owner and Transmission Provider (including, without limitation, those requirements of Power Company set forth in Exhibit C hereof and those requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof), and (d) in accordance with the provisions of this Agreement. Consumer may operate the Electric Generating Facility in parallel and in synchronization with the electric power and energy provided by Power Company to Consumer pursuant to the Agreement for Electric Service, as an auxiliary or supplement to such electric power and energy, and may use the output of the Electric Generating Facility to meet the requirements of Consumer's electric consuming facilities located on the Premises. Any output of the Electric Generating Facility in excess of the requirements of Consumer's electric consuming facilities located on the Premises shall be transferred to the Power Company and credited against the Consumer's bill for electric service in accordance with the net metering arrangements described in this Agreement, the Agreement for Electric Service, and the Net Metering Rate Schedule attached to the Agreement for Electric Service.

3.2 Protection and System Quality. Consumer shall, at its expense, provide, install, own, operate and maintain System Protection Facilities, including such protective and regulating devices as are required by NERC, ReliabilityFirst, the Power Company, Transmission Owner or

Transmission Provider, or by order, rule or regulation of any duly-constituted regulatory authority having jurisdiction, or as are otherwise required by Good Utility Practice in order to protect persons and property and to minimize deleterious effects to the Power Company Distribution System and the transmission system of Transmission Owner. Any such protective or regulating devices that may be required on Power Company's or Transmission Owner's facilities in connection with the operation of the Electric Generating Facility shall be installed by Power Company or Transmission Owner, as the case may be, at Consumer's expense. Power Company reserves the right to modify or expand its requirements for protective devices in conformance with Good Utility Practice.

3.3 Inspection. Power Company shall have the right, but shall have no obligation or responsibility to (a) observe Consumer's tests and inspections of any of Consumer's protective equipment, (b) review the settings of Consumer's protective equipment, and (c) review Consumer's maintenance records relative to the Electric Generating Facility and Consumer's protective equipment. The foregoing rights may be exercised by Power Company from time to time as deemed necessary by the Power Company upon reasonable notice to Consumer. However, the exercise or non-exercise by Power Company of any of the foregoing rights of observation, review or inspection shall be construed neither as an endorsement or confirmation of any aspect, feature, element, or condition of the Electric Generating Facility or Consumer's protective equipment or the operation thereof, nor as a warranty as to the fitness, safety, desirability, or reliability of same.

3.4 Disconnection. Upon termination of the Agreement for Electric Service by its terms, Consumer shall disconnect the Electric Generating Facility from the Power Company Distribution System. Power Company shall have the right to disconnect, or to require the Consumer to disconnect, the Electric Generating Facility immediately and without prior notice if, in the Power Company's sole opinion, an Emergency exists and immediate disconnection is necessary to protect persons or property from injury or damage. Power Company shall have the right to disconnect, or to require the Consumer to disconnect, the Electric Generating Facility with no less than seven days prior notice if, in the Power Company's sole opinion, such disconnection is required in order for the Power Company to conduct maintenance, repairs or replacements of its facilities or the Power Company Distribution System. Consumer shall disconnect the Electric Generating Facility immediately if an Emergency exists and immediate disconnection is necessary to protect persons or property from injury or damage.

ARTICLE 4 – EMERGENCIES

The Consumer agrees to comply with NERC, ReliabilityFirst, Power Company, Transmission Owner and Transmission Provider Emergency procedures, as applicable, with respect to Emergencies (including, without limitation, those of requirements of the Power Company set forth in Exhibit C hereof and those requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof). The Consumer shall provide the Power Company with oral notification that is prompt under the circumstances of an Emergency which may reasonably be expected to affect the Power Company Distribution System or the transmission system of Transmission Owner, to the extent the Consumer is aware of the Emergency. To the extent the Consumer is aware of the facts of the Emergency, such

notification shall describe the Emergency, the extent of the damage or deficiency, its anticipated duration, and the corrective action taken or to be taken, and shall be followed as soon as practicable with written notice. In the event of an Emergency, the party becoming aware of the Emergency may, in accordance with Good Utility Practice and using its reasonable judgment, take such action as is reasonable and necessary to prevent, avoid, or mitigate injury, danger, damage or loss.

ARTICLE 5 – MODIFICATIONS AND CONSTRUCTION

5.1 Modifications. Either party may undertake modifications to its facilities; provided, that Consumer shall not increase the output of the Electric Generating Facility or make other material change or modification to the configuration or operation of the Electric Generating Facility without the prior written consent of Power Company and Buckeye. In the event that the Consumer plans to undertake a modification that reasonably may be expected to impact the Power Company's facilities, the Consumer shall provide the Power Company and Buckeye with sufficient information regarding such modification so that the Power Company and Buckeye can evaluate the potential impact of such modification prior to commencement of the work.

5.2 Construction.

5.2.1 Land Rights. Consumer shall furnish at no cost to Power Company any necessary access, easements, licenses, and/or rights of way upon, over, under, and across lands owned or controlled by Consumer and/or its affiliated interests for the construction, operation and maintenance by Power Company of necessary lines, substations, and other equipment to accomplish interconnection of the Electric Generating Facility with the Power Company Distribution System under this Agreement and the provision of electric service to the Consumer under the Agreement for Electric Service, and shall, at all reasonable times, give the Power Company, and its agents, free access to such lines, substations, and equipment. An accessible, protected and satisfactory site selected upon mutual agreement by the Parties and located on the Consumer's premises shall be provided by and at the Consumer's expense for installation of necessary net metering equipment, unless Power Company elects to install the net metering equipment on a location controlled by it.

5.2.2 Electric Generating Facility and Equipment Design and Construction. Consumer shall, at its sole expense, design, construct, and install the Electric Generating Facility and all equipment needed to interconnect the Electric Generating Facility with the Power Company Distribution System, except for any Interconnection Facilities to be constructed by Power Company pursuant to Exhibit A hereof. The Consumer's Interconnection Facilities and equipment shall satisfy all requirements of applicable safety and engineering codes, including the Power Company's, and further, shall satisfy all requirements of any duly-constituted regulatory authority having jurisdiction and the requirements of Transmission Owner and Transmission Provider (including, without limitation, those of requirements, if any, of Transmission Owner or Transmission Provider set forth in Exhibit D hereof). Consumer shall submit all specifications for Consumer's Interconnection Facilities and equipment, including System Protection Facilities, to the Power Company for review at least ninety (90) days prior to interconnecting such Interconnection Facilities and equipment with the Power Company Distribution System. Power

Company's review of Consumer's specifications shall be construed neither as confirming nor as endorsing the design, nor as any warranty as to fitness, safety, durability or reliability of Consumer's interconnection facilities or equipment. Power Company shall not, by reasons of such review or failure to review, be responsible for strength, details of design, adequacy or capacity of Consumer's Interconnection Facilities or equipment, nor shall Power Company's acceptance be deemed to be an endorsement of any facility or equipment. Consumer agrees to make changes to its Interconnection Facilities and equipment as may be reasonably required to meet the requirements of the Power Company. In the event it becomes necessary for Power Company to alter, add to, relocate or rearrange the Interconnection Facilities or to rearrange or relocate existing Power Company-owned facilities which are not Interconnection Facilities to continue to conduct interconnected operations in accordance with Good Utility Practice, then Consumer shall pay for such work.

ARTICLE 6 – METERING

Power Company shall purchase and install Net Metering Equipment to meter the Power Company's electric service to the Consumer and the electrical output of the Electric Generating Facility. Power Company shall own, operate and maintain the Net Metering Equipment. All costs associated with the purchase, installation, ownership, operation and maintenance of Net Metering Equipment, as more fully described in Exhibit B hereof shall be borne by Consumer.

ARTICLE 7 – INFORMATION REPORTING

Consumer shall promptly provide to the Power Company all relevant information, documents, or data regarding the Consumer's facilities and equipment that have been reasonably requested by the Power Company.

ARTICLE 8 – INDEMNITY AND LIABILITY

Consumer agrees to fully indemnify, release, and hold Power Company, its members, trustees, officers, managers, employees, agents, representatives, and servants, Power Company's affiliated and associated companies, and their respective members, trustees, shareholders, directors, partners, stakeholders, officers, managers, employees, agents, representatives, and servants, and Power Company's successors and assigns, harmless from and against any and all claims, demands, liabilities, losses, damages, costs and expenses (including attorneys' fees and other costs of defense) of any nature or kind whatsoever, including, but not limited to, claims, demands and/or liabilities for personal injury to (including death of) any person whomever (including payments and awards made to employees or others under any workers' compensation law or under any plan for employees' disability and death benefits) and for damage to any property whatsoever (including Consumer's Electric Generating Facility, the Power Company Distribution System, and the transmission system of Transmission Owner) arising out of or otherwise resulting from the use, ownership, maintenance, or operation of the Electric Generating Facility or the Interconnection Facilities, regardless of whether such claims, demands or liability are alleged to have been caused by negligence or to have arisen out of Power Company's status as the owner or operator of facilities involved; provided, however, that the foregoing shall not apply to the extent that any such personal injury or property damage is held

to have been caused by the gross negligence or intentional wrongdoing of Power Company or its agents or employees. Neither party shall be liable in statute, contract, in tort (including negligence), strict liability, or otherwise to the other party, its agents, representatives, affiliated and associated companies, or assigns, for any incidental or consequential loss or damage whatsoever, including, but not limited to, loss of profits or revenue, resulting from any party's performance or non-performance of an obligation imposed on it by this Agreement.

ARTICLE 9 – INSURANCE

9.1 Consumer shall obtain and maintain the following policies of insurance during the term of the Agreement: Comprehensive or Commercial General Liability insurance with bodily injury and property damage combined single limits of at least $250,000 per occurrence if the Electric Generating Facility is 10 kW or less, $1,000,000 per occurrence if the Electric Generating Facility is greater than 10 kW but less than 100 kW, and $5,000,000 per occurrence if the Electric Generating Facility is 100 kW or greater. Such insurance shall include, but not necessarily be limited to specific coverage for contractual liability encompassing the indemnification provisions in Article 8, broad form property damage liability, personal injury liability, explosion and collapse hazard coverage, products/completed operations liability, and, where applicable, watercraft protection and indemnity liability.

9.2 The coverages requested in Section 9.1 above should be "occurrence" form policies. In the event Consumer has "claims-made" form coverage, Consumer must obtain prior approval of all "claims-made" policies from Power Company.

9.3 Consumer shall cause its insurers or agents to provide Power Company with certificates of insurance evidencing the policies and endorsements listed above prior to interconnecting the Electric Generating Facility with the Power Company Distribution System, as well as copies of each annual renewal certificate for such policies and endorsements, promptly after such renewal certificates are issued. Power Company shall have the right to review the policies and endorsements listed above at any time during the term of this Agreement, and Consumer shall promptly provide copies of the same to Power Company upon its request. Failure of Power Company to obtain certificates of insurance does not relieve Consumer of the insurance requirements set forth herein. Failure to obtain the insurance coverage required by this Article 9 shall in no way relieve or limit Consumer's obligations and liabilities under other provisions of this Agreement.

ARTICLE 10 – BUCKEYE, TRANSMISSION OWNER AND TRANSMISSION PROVIDER CONSENT

The consent of Buckeye, the Transmission Owner and/or Transmission Provider, if the Power Company determines that such consent is required, shall be required prior to any interconnection of the Consumer's Electric Generating Facility with the Power Company Distribution System.

ARTICLE 11 – TERM

This Agreement shall commence as of _____ and shall terminate upon the termination of the Agreement for Electric Service.

ARTICLE 12 – MISCELLANEOUS

This Agreement shall be binding upon and inure to the benefit of the parties hereto and their respective successors, legal representatives and assigns; provided, however, this Agreement shall not be assigned by the Consumer without the prior written consent of the Power Company, any such assignment by the Consumer being null and void without such consent. This Agreement shall not be effective unless approved in writing by all governmental agencies from which approval is required. This Agreement shall be governed by and construed in accordance with the laws of the State of Ohio, except for any conflicts of laws provisions. This Agreement may not be modified except in a writing signed by both parties hereto.

IN WITNESS WHEREOF, the Parties have executed this Agreement as of the date first written above.

_____

By: _____
Name: _____
Title: _____

_____

By: _____
Name: _____
Title: _____

EXHIBIT A
INTERCONNECTION FACILITIES

This Exhibit A is a part of the Agreement for Interconnection and Parallel Operation between Consumer and Power Company.

Point of Interconnection

The point of interconnection will be at the point where _____. See Drawing No. _____, dated _____, which drawing is attached hereto and made a part hereof.

Interconnection Facilities to be Furnished by Power Company

Power Company shall construct the following interconnection facilities:

See the Power Company Feasibility Study, a copy of which is attached hereto and made a part hereof.

Interconnection Facilities to be Furnished by Consumer

Consumer shall construct the following interconnection facilities:

_____

Cost Responsibility

Consumer shall be solely responsible for all costs associated with Consumer's construction of Interconnection Facilities.

Consumer and Power Company hereby acknowledge and agree that the cost listed below is only an estimate and that Consumer hereby agrees to and shall reimburse Power Company for all actual costs, including any applicable taxes, associated with the Power Company's construction of Interconnection Facilities as set forth in this Exhibit A. The cost of the Power Company's Interconnection Facilities is estimated to be $_____. The Consumer will pay to the Power Company a deposit of $_____ coincident with the execution of the Agreement.

EXHIBIT B
NET METERING EQUIPMENT

This Exhibit B is a part of the Agreement for Interconnection and Parallel Operation between Consumer and Power Company.

The net metering facilities will be located at_____.

Power Company, at Consumer's expense, will purchase, install, own, operate, and maintain the following net metering instrumentation as required for on site metering and telemetering:

Net metering will be accomplished using a single meter or pair of meters capable of registering the flow of electricity in each direction from the Power Company Distribution System to Consumer's electric consuming facilities located on the Premises, and from Consumer's Electric Generating Facility to the Power Company Distribution System. If the existing electrical meter or meters in service at the Consumer's Premises is/are not capable of measuring the flow of electricity in each direction, the Power Company will purchase, install, own, operate, and maintain an approved meter or meters that is/are capable of measuring electricity in each direction. The Consumer will pay the Power Company all expenses involved in either modifying the existing meter(s) or providing a new meter(s) capable of measuring the flow of electricity in each direction. Maintenance of the meter(s) will be the responsibility of the Power Company, which will own the meter(s).

Consumer and Power Company hereby acknowledge and agree that the cost listed below is only an estimate and that Consumer hereby agrees to and shall reimburse Power Company for all actual costs, including any applicable taxes, associated with the Power Company's installation of Net Metering Equipment as set forth in this Exhibit B. The cost for the Net Metering Equipment is estimated to be $_____.

EXHIBIT C
POWER COMPANY REQUIREMENTS

[insert the Power Company's Rules and Regulations for Distributed Resources and the Power Company's Technical Guidelines for Interconnection and Parallel Operation]

EXHIBIT D
TRANSMISSION OWNER AND/OR TRANSMISSION PROVIDER REQUIREMENTS

[The Consumer shall pay for all facilities and upgrades identified by the Transmission Owner and/or Transmission Provider in the _____, a copy of which is attached hereto and made a part hereof. The Consumer shall enter into any facilities/construction agreements required by the Transmission Owner/Transmission Provider in connection with the construction of the necessary transmission facilities/upgrades identified in the attached report.]

EXHIBIT E
ELECTRIC GENERATING FACILITY DESCRIPTION

_____
_____. A more detailed description of the Electric Generating Facility is attached.

Appendix C: Utility Interconnection Agreements (cont.)

Lorain Medina Rural Electric Net-Metering Agreement

LORAIN-MEDINA RURAL ELECTRIC COOPERATIVE, INC.

SINGLE PHASE GENERAL SERVICE RATE-NET METERING

SCHEDULE TOD-AN

AVAILABILITY:

Available to Consumers contracting for electric service from the Cooperative who, through the operation of qualifying cogeneration or small power production facilities, as defined in the Cooperative's Operational Policy relating thereto, with a design capacity of 25 kilowatts or less, have available electric energy and the associated capacity which they desire to sell to the Cooperative in accordance with the requirements of the Public Utility Regulatory Policies Act of 1978, as amended, and all governmental regulations lawfully promulgated thereunder (PURPA) and the Cooperative's applicable rules, regulations, policies and rate schedules, in circumstances where the output of such facility is not reasonably anticipated to exceed the annual electric energy requirements of the Consumer and provided that the total aggregate electric generating capacity of all qualifying facilities interconnected to the electric distribution systems of the members of Buckeye Power, Inc. (Buckeye) and net metered does not exceed 1% of Buckeye's aggregate peak electric demand of all of the Buckeye members.

NET METERING:

Compliance with applicable rules, regulations, policies and terms of this rate schedule is a condition precedent to purchases hereunder. The Consumer shall use the output of the qualifying facility first to meet the requirements of Consumer's electric consuming facilities located on the Premises. Any output of the qualifying facility in excess of the requirements of Consumer's electric consuming facilities shall be transferred to the Cooperative and credited against the Consumer's bill for electric service hereunder. Consumer shall only be entitled to receive a billing credit for any such output of the qualifying facility in excess of the requirements of the Consumer's facilities, and in no event shall the Consumer be entitled to receive any payment from the Cooperative for any such excess output of the qualifying facility.

APPLICABILITY:

Applicable to single-phase consumers requiring up to and including 100kVA of installed transformer capacity or having less than or equal to 100 kW of billing demand.

MONTHLY RATE:

Service Charge			$33.00
Distribution Delivery Services Energy Charge:			
First 1,000 kWh per month	@	$.011535	per kWh
Over 1,000 kWh per month	@	$.018374	per kWh
Wholesale Power Generation-Related Charge:			
All On-Peak kWh per month	@	$.062842	per kWh
All Off-Peak kWh per month	@	$.052842	per kWh
Wholesale Power Transmission-Related Charge:			
All kWh per month	@	$.004615	per kWh

DETERMINATION OF ON-PEAK AND OFF-PEAK HOURS:

The monthly Wholesale Power Generation-Related Charge will be based on the metered usage during the on-peak and off-peak times, defined as:

On-Peak Periods: Summer (May 23 – September 22) 2 pm – 10 pm Mon-Fri
Winter (All other dates not noted above or defined as Off-Peak)
6 am – 9 am Mon-Fri and 5 pm – 10 pm Mon-Fri

Off-Peak Periods: All other times not noted above are defined as Off-Peak periods. In addition, the following days are also defined as Off-Peak:

Saturday and Sunday
Christmas Day
New Years Day
Memorial Day
4th of July
Labor Day

MINIMUM CHARGE:

The minimum monthly charge shall be the above Service Charge, or such other minimum as may be established by contract.

Seasonal disconnects will not avoid the minimum monthly charge.

ADJUSTMENTS**:**

Purchase Power Costs – The above rate may be increased or decreased in accordance with the Cooperative's Power Cost Adjustment Clause, Schedule PA.

SPECIAL TAX AND ASSESSMENTS:

The rates under this Schedule are based upon and dependent upon Federal, State, County, Municipal and other government levies, including gross receipts taxes, kWh taxes, income taxes, license fees and other impositions of similar character in effect as of March 3, 2001. In event of an increase in or the addition of such levies, taxes, license fees, etc. or other impositions of similar character based upon generation, transmission, distribution, purchase and/or sale of electric service or energy, imposed upon or required to be paid by the Cooperative, the rates herein may be increased by a surcharge equal to the amount of the cost per kWh, per consumer, per demand or capacity, or other directly allocatable applicable units of charge for such new or additional levies, taxes, licenses or other fees of similar character.

TERMS OF PAYMENT:

The above rate is net, the gross rate being ten percent higher. In the event the current bill is not paid by the 24th of the month, the gross rate shall apply.

METERING:

Net metering will be accomplished using a single meter or pair of meters capable of registering the flow of electricity in each direction from the Cooperative's electric distribution system to Consumer's electric consuming facilities located on the Premises, and from Consumer's qualifying facility to Cooperative's electric distribution system.

RULES AND REGULATIONS:

The Cooperative's rules and regulations relating to the purchases from qualifying cogeneration and small power production facilities as they are now in effect or as they may hereafter by amended from time to time, are incorporated into and made a part of this rate schedule as if contained herein. The Consumer shall comply with all the provisions of such rules and regulations.

Date Issued 11/06/2010 Date Effective 01/01/2011

Appendix D: Sites with Special Avian Designations in Study Area of the Curry & Kerlinger Feasibility Study

Table 24: Sites with Special Avian Designations in Study Area

Wildlife Area	Special Designations			
	ACZ	IBA Focus	ABC	Stopover
National Wildlife Refuges (NWRs)				
Cedar Point NWR	+	+	+	+
Ottawa NWR (all sections)	+	+	+	+
State Wildlife Areas (SWAs)				
Little Portage SWA	+			
Magee Marsh SWA	+	+	+	+
Mallard Club SWA	+	+		
Metzger Marsh SWA	+	+	+	+
Pickerel Creek SWA	+	+		+
Pipe Creek SWA	+			+
Resthaven SWA	+	+		+
Toussaint SWA	+			
Willow Point SWA	+			
Winous Conservancy	+			
Private Protected Areas				
Winous Conservancy	+			+
Other				
Black River-Mouth/Harbor	+	+		
Crane Creek Estuary	+			+
Crane Creek State Park	+	+		
Edison Wood Reserve	+	+		
Lorain Impoundment	+	+		
Maumee Bay	+		+	
Maumee Bay State Park	+			+
Muddy Creek Bay	+			+
Ottawa Shooting Club	+			+
Port Clinton Beach	+	+		
Sandusky Bay	+	+	+	
Sheldon Marsh State Nature Preserve	+			+
Vermillion River	+	+		