SABULA MUNICIPAL ELECTRIC UTILITY

Interconnection Standards for

Parallel Installation and Operation of

Customer-Owned

Distributed Generation Facilities

 **Resolution #1221**

 Adopted: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Contents

[Part 1. OVERVIEW 2](#_Toc30132)

[1. PURPOSE: 2](#_Toc30133)

[2. DEFINITIONS: 2](#_Toc30134)

[3. ELIGIBILITY: 5](#_Toc30135)

[4. REQUEST: 5](#_Toc30136)

[5. SYSTEM EFFECTS: 5](#_Toc30137)

[6. SYSTEM UPGRADES: 5](#_Toc30138)

[7. AGREEMENT: 5](#_Toc30139)

[8. CODES AND PERMITS: 6](#_Toc30140)

[9. METERING: 6](#_Toc30141)

[10. CERTIFICATE OF COMPLETION: 6](#_Toc30142)

[11. INITIATION OF NORMAL OPERATION: 6](#_Toc30143)

[12. BATTERY STORAGE SYSTEMS, ENERGY STORAGE DEVICES, HYBRID GENERATION-STORAGE SYSTEMS, PLUG-IN ELECTRIC AND HYBRID VEHICLES 6](#_Toc30144)

[Part 2. TECHNICAL REQUIREMENTS 7](#_Toc30145)

[1. CHARACTER OF SERVICE: 7](#_Toc30146)

[2. CODE REQUIREMENTS: 7](#_Toc30147)

[3. GENERATING FACILITY CONTROL AND OPERATION: 7](#_Toc30148)

[4. FAULT CURRENT CONTRIBUTION: 7](#_Toc30149)

[5. RECLOSING COORDINATION: 7](#_Toc30150)

[6. DISCONNECT DEVICE: 7](#_Toc30151)

[7. STANDARDS FOR INTERCONNECTION, SAFETY, AND OPERATING RELIABILITY: 8](#_Toc30152)

[Part 3. METERING FOR CUSTOMERS’ DISTRIBUTED GENERATION 8](#_Toc30153)

[Part 4. INTERCONNECTION APPLICATION 10](#_Toc30154)

[Part 5. INTERCONNECTION AND METERING AGREEMENT 15](#_Toc30155)

[Part 6. CERTIFICATE OF COMPLETION 24](#_Toc30156)

[Part 7. APPROVAL TO ENERGIZE GENERATING FACILITY 24](#_Toc30157)

2

## Part 1. OVERVIEW

###  1. PURPOSE:

The purpose of this document is to establish standards for the Utility to interconnect and operate in parallel with customer-owned distributed generation facilities, including but not limited to wind turbines and solar energy systems.

###  2. DEFINITIONS:

1. Applicable Laws and Regulations – All duly promulgated applicable federal, state and local laws, regulations, rules, ordinances, codes, decrees, judgments, directives or judicial or administrative orders, permits and other duly authorized actions of any Governmental Authority.
2. Avoided Costs – The incremental costs to the Utility of electric energy or capacity or both which, but for the purchase from the Customer’s Generating Facility, the Utility would generate itself or purchase from another source.
3. Customer – Any entity interconnected to the Utility’s distribution system for the purpose of receiving retail electric power service from the Utility’s distribution system.
4. Customer Generator – The owner or operator of a Generating Facility which:

i. is located on premises owned, operated, leased or otherwise controlled by the

Customer Generator; ii. is interconnected and operates in parallel phase and synchronization with the Utility and is in compliance with the standards established by the Utility;

* 1. is intended primarily to offset part or all of the Customer Generator’s own electrical energy requirements;
	2. contains a mechanism, approved by the Utility, that automatically disables the unit and interrupts the flow of electricity back onto the Distribution System in the event that service to the Customer Generator is interrupted.
1. Distribution System – The Utility's facilities and equipment used to transmit electricity to ultimate usage points such as homes and industries directly from nearby generators or from interchanges with higher voltage transmission networks which transport bulk power over longer distances.
2. Force Majeure – A Force Majeure event shall mean “any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm or flood, explosion, breakage or accident to machinery or equipment, any order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities or any other cause beyond a Party’s control”. A Force Majeure event does not include an act of negligence or intentional wrongdoing.
3. Generating Facility – For purposes of this Standard, the Customer's device for the generation of electricity or the conversion of wind or solar energy to electricity, as identified in the Customer’s Interconnection Application.
4. Good Utility Practice – Any of the practices, methods and acts engaged in or approved by a significant portion of the electric 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 a reasonable cost consistent with good business practices, reliability, safety and expedition. Good Utility Practice is not intended to be limited to the optimum practice, method act to the exclusion of all others, but rather to be acceptable practices, methods or acts generally accepted in the region.

1. Governmental Authority – Any federal, state, local or other governmental regulatory or administrative agency, court, commission, department, board or other governmental subdivision, legislature, rulemaking board, tribunal or other governmental authority having jurisdiction over the Parties, their respective facilities or the respective services they provide, and exercising or entitled to exercise any administrative, executive, police or taxing authority or power; provided, however, that such term does not include the Customer or any affiliate thereof.
2. Interconnection Application – The Customer's request to interconnect a new Generating Facility, or to increase the capacity of, or make a material modification to the operating characteristics of, an existing Generating Facility that is interconnected with the Utility’s electrical system.
3. Interconnection Standard and Interconnection Standards – Any reference to Interconnection Standard or Interconnection Standards shall mean all the provisions, forms and related documents described in the collective parts of this document, the Interconnection Standards for Parallel Installation and Operation of Customer-Owned Distributed Generation Facilities, as of the date adopted and printed on the cover page hereof.
4. Metering and Distributed Generation Metering - A bi-directional metering process using one or multiple meters and equipment sufficient to separately measure, or measure the difference between, the electrical energy supplied by a Customer Generator to the Utility’s Distribution System and the electrical energy supplied by the Utility’s Distribution System to the Customer Generator, over an applicable billing period.
5. Qualifying Facility – A cogeneration facility or a small power production facility that is a qualifying facility under 18 CFR Part 292, Subpart B, used by a Customer to generate electricity that operates in parallel with the Distribution System or local electric power system. A Qualifying Facility with output rated at more than 10 kilowatts (kW) or a Qualifying Facility not covered by this Interconnection Standard may qualify for interconnection with the Utility under provisions of the Public Utilities Regulatory Policies Act (PURPA), but the terms and conditions of interconnection shall be determined by the Utility on a case-by-case basis.
6. Reasonable Efforts – With respect to an action required to be attempted or taken by a Party under the Interconnection Agreement, efforts that are timely and consistent with Good Utility Practice and are otherwise substantially equivalent to those a Party would use to protect its own interests.
7. System Upgrades – The additions, modifications and upgrades to the Utility's Distribution System at or beyond the point of interconnection to facilitate interconnection of the Generating Facility and render the transmission service necessary to affect the Interconnection Customer's wholesale sale of electricity in interstate commerce. Distribution Upgrades do not include Interconnection Facilities.

###  3. ELIGIBILITY:

1. Interconnection to the electric system shall be granted only to new or existing customers, in good standing, under the Utility’s electric service schedules. Interconnection will be made only upon written application, upon compliance by the applicant with the rules, regulations and Interconnection Standards of the Utility, upon execution by the Customer of an Interconnection Agreement in the form approved by the Utility, and after approval of the application by the Utility upon inspection for compatibility with the Utility’s grid system. The Interconnection Agreement shall be between the Customer and the Utility and will not include third parties.
2. The Interconnection Standards apply to a customer-owned Generating Facility with a rated output of 10 kilowatts (kW) or fewer.

1. Proposals to interconnect a customer-owned distributed generation facility with output rated at more than 10 kW or a Qualifying Facility not covered by this Interconnection Standard will be subject to a review process by the Utility that may take into account factors including, but not limited to, the impact of the interconnection on reliability, rates, power supply agreements and local and regional system planning. If approved, such facilities shall be subject to the terms and provisions of the Interconnection Standards, with such modifications or additional terms and conditions as determined by the Utility on a case by case basis. The form of Interconnection Agreement for any such facility, if otherwise determined by the Utility to be eligible for interconnection, may be modified by the Utility to reflect such modified or additional terms and conditions for interconnection.

###  4. REQUEST:

The Customer shall make a request by completing the attached document entitled “Application for Interconnection and Operation of Customer-Owned Generation”. The Utility may require additional details or clarifications as needed to properly evaluate the application.

###  5. SYSTEM EFFECTS:

The Utility will analyze the overall impact of the proposed Generating Facility on the transmission and distribution system. Such analyses will be based on Good Utility Practice to determine thermal effects, voltage ranges, power quality, system stability, etc.

###  6. SYSTEM UPGRADES:

As a result of the above analysis, the Utility will provide the Customer with a cost estimate and projected timeframe for any system upgrades that may be necessary to accommodate the generating facility.

###  7. AGREEMENT:

Once the Customer and the Utility have identified and mutually agreed on the scope of the overall project including the Generating Facility, system upgrades and estimated costs, the Customer and the Utility shall execute an Interconnection Agreement in the form attached to this Interconnection Standard. Notwithstanding the foregoing, the terms and conditions for interconnection and the form and content of the Interconnection Agreement shall be determined by the Utility on a case by case basis with respect to a customer-owned generation facility with output rated at more than 10 kW or a Qualifying Facility not covered by this Interconnection Standard.

###  8. CODES AND PERMITS:

1. The Customer shall be responsible for procuring all building, operating and environmental permits that are required by any Governmental Authority having jurisdiction for the type of generating facility and for the necessary ancillary structures to be installed.
2. The equipment shall meet the standards listed in Part 2, Sections 2 and 7, of this Interconnection Standard.
3. The construction and facilities shall meet all applicable building and electrical codes.

###  9. METERING:

1. The Customer shall cooperate with all Metering installation and servicing to permit the bidirectional flow of electricity and the financial treatment of the deliveries.

1. Utility will furnish and install a bi-directional meter at the Customer’s location. At the time of installation, the Customer will pay the Utility a one-time interconnection fee in the amount of $275.00, plus any additional amounts necessary, in the form of upgrades or otherwise, to accommodate the Customer’s system. The Customer will pay a $5.00 per month meter charge to the Utility and a $15 service charge.

###  10. CERTIFICATE OF COMPLETION:

Upon completion of the generating facility and prior to normal operation, the Customer shall provide a signed copy of the attached document entitled “Certificate of Completion”.

###  11. INITIATION OF NORMAL OPERATION:

The Customer may begin normal operation of the generating facility upon completion of all documentation and receipt of written approval from the Utility in the form of the attached document entitled “Approval to Energize Generating Facility”.

### 12. BATTERY STORAGE SYSTEMS, ENERGY STORAGE DEVICES, HYBRID GENERATION-STORAGE SYSTEMS, PLUG-IN ELECTRIC AND HYBRID VEHICLES

Customer shall not store energy generated by the Distributed Generation Facility or energy delivered by the Utility, in either case for sale or delivery of such energy to the Utility. Customer shall not deliver any stored energy to the Utility, and Utility shall have no obligation to make payment or provide credit for any such energy delivered by Customer.

# Part 2. TECHNICAL REQUIREMENTS

###  1. CHARACTER OF SERVICE:

The electrical service shall be 60 cycle per second alternating current (AC) at supply voltages and number of phases that apply under the Utility’s rate schedules.

###  2. CODE REQUIREMENTS:

The Generating Facility shall meet all requirements established by the National Electrical Code (NEC), National Electrical Safety Code (NESC), Institute of Electrical and Electronics Engineers (IEEE), Underwriters Laboratories (UL) and Occupational Safety and Health Administration, including but not limited to the specific codes listed in Section 7 of this Part 2, below. In addition, all of the manufacturer’s ownership, operating and maintenance manuals shall be reviewed by both parties prior to beginning operation and Customer shall follow and comply with such manuals.

###  3. GENERATING FACILITY CONTROL AND OPERATION:

The control system of the Generating Facility shall comply with the IEEE specifications and standards for parallel operation with the Utility and in particular as follows:

1. Power output control system shall automatically disconnect from Utility source upon loss of Utility voltage and not reconnect until Utility voltage has been restored by the Utility.
2. Power output control system shall automatically disconnect from Utility source if Utility voltage fluctuates beyond plus or minus 10% (ten percent).
3. Power output control system shall automatically disconnect from Utility if frequency fluctuates plus or minus 2 cycles (Hertz).
4. Inverter output distortion shall meet IEEE requirements.
5. The Generating Facility shall meet the applicable IEEE standards concerning impacts to the Distribution System with regard to harmonic distortion, voltage flicker, power factor, direct current injection and electromagnetic interference.

###  4. FAULT CURRENT CONTRIBUTION:

The Generating Facility shall be equipped with protective equipment designed to automatically disconnect during fault current conditions and remain disconnected until the voltage and frequency have stabilized.

###  5. RECLOSING COORDINATION:

The Generating Facility shall be coordinated with the Distribution System reclosing devices by disconnecting from the system during the initial de-energized operation and shall remain disconnected until the voltage and frequency have stabilized.

###  6. DISCONNECT DEVICE:

A safety disconnect switch shall be installed that is visible to and readily accessible by Utility personnel. The switch shall be capable of being locked in the open position and shall prevent the generator from supplying power to the distribution system.

###  7. STANDARDS FOR INTERCONNECTION, SAFETY, AND OPERATING RELIABILITY:

The interconnection of a Customer-Owned Generating Facility and associated interconnection equipment to the Utility’s Distribution Facilities shall comply with all applicable laws and regulations, including but not limited to the applicable provisions of the following publications and regulations:

1. ANSI/IEEE1547-2003 Standard for Interconnecting Distributed Resources with Electric Power Systems (including use of IEEE 1547.1 testing protocols to establish conformity). The following standards shall be used as guidance in applying IEEE 1574:

i. IEEE Std 519-1992, IEEE Recommended Practices and Requirements for Harmonic

Control in Electrical Power Systems ii. IEC/TR3 61000-3-7 Assessment of emission limits for fluctuating loads in MV and HV power systems

1. Iowa Electric Safety Code, as defined in 199 IAC Chapter 25
2. ANSI/NFPA 70 (2011), National Electrical Code
3. OSHA (29 CFR § 1910.269)
4. 199 IAC Section 15.10 Standards for Interconnection, Safety and Operating Reliability

## Part 3. METERING FOR CUSTOMERS’ DISTRIBUTED GENERATION

1. **PURPOSE:**

The provisions of this policy set forth the terms and conditions under which a customer may be compensated for net deliveries of energy and/or capacity to the Utility from Customer Generators with distributed generation facilities approved by the Utility.

1. **DEFINITIONS:**

The definitions used in this Part are those found in Part 1, Section 2 of this Interconnection Standard.

1. **NET METERING GENERAL PROVISIONS:**
	1. The Utility shall offer Net Metering to eligible Customers who wish to generate electricity on the Customer’s side of the meter using wind or solar energy resources.
	2. Net Metering is intended for Customer Generators with a rated output of 10 kilowatts (kW) or less produced through conversion of wind or solar energy.
	3. Subject to the terms and conditions of the Interconnection Standards, the Utility shall offer Metering to its Customers that wish to generate electricity on the Customer’s side of the meter using distributed generation facilities.
	4. Customer Generators shall be equipped with properly approved Utility metering equipment that can measure the flow of electricity in both directions at the same rate. Necessary metering will be supplied and installed by the Utility. The Customer shall pay all costs associated with such metering, except in the case of separate metering, in which case the Utility shall pay the costs of metering the sale and delivery of energy to Customer, and Customer shall pay all costs of metering the sale and delivery of energy generated by the Generating Facility at the end of each billing cycle.
	5. Whenever the amount of electricity delivered by an eligible Customer Generator in a billing period exceeds the electricity supplied by the Utility in such billing period, the Utility shall settle with the Customer Generator for the excess kilowatt-hours (kWh) in accordance with the billing practices described in this policy and the Interconnection Agreement between the Utility and the Customer.
	6. If a Customer Generator formally terminates operation of its Generating Facility, the Utility shall treat the end of the service period as if it were the end of the billing period and, if applicable, settle with the Customer Generator according to the appropriate billing practices.
	7. The Utility shall provide electric service to a Customer Generator at non-discriminatory rates that are identical with respect to the applicable customer rate class, retail rate components, and any monthly charges, to the rates that a customer would be charged if not a Customer Generator.
	8. The Utility shall not charge a Customer Generator any fee or charge, or require additional equipment or any other requirement, unless the fee, charge or other requirement is specifically authorized under the terms of the Interconnection Agreement or this Policy or if the fee, charge or other requirement would apply to other customers that are not Customer Generators. Any insurance coverage that may be required is specifically exempted from this paragraph.
	9. Nothing in this Policy shall abrogate any Customer’s obligation to comply with all applicable Federal, State and local laws, codes, regulations and ordinances, and the Service Rules and Policies of the Utility.
2. **INTERCONNECTION STANDARDS:**

To qualify for interconnection and Metering, Customer Generators must comply with the Utility’s Interconnection Standards for Parallel Installation and Operation of Customer-Owned Distributed Generation Facilities.

1. **REQUEST:**

The Customer Generator shall make a request for interconnection and Metering by completing the Utility’s Application for Interconnection and Operation of Customer-Owned Generation. The Utility may require additional details or clarifications as needed to properly evaluate the application.

1. **BILLING PRACTICES:**

The following billing provisions shall apply to a Customer whose Generating Facility is eligible for Interconnection under Part 1, Section 3 of this Standard and has received Approval to Energize under Part 7 of this Standard.

* 1. Positive Net Consumption. Whenever the amount of electricity delivered by an eligible Customer Generator in a billing period is less than the electricity delivered by the Utility during such billing period, after any offsets from credited kilowatt-hours carried forward from prior billing periods, billing for the net energy supplied by the Utility will be made in accordance with the rate schedule applicable to the Customer’s assigned rate class and all applicable riders in effect on the last day of the applicable billing cycle.
	2. Negative Net Consumption. Whenever the amount of electricity delivered by an eligible Customer Generator in a billing period is more than the electricity supplied by the Utility in a billing period, the Utility shall credit the Customer Generator for the excess kilowatt-hours for use in subsequent billing periods. At the end of the last billing period in each calendar year, the Utility shall pay for such excess of energy at the Utility’s avoided costs rate in effect on the last day of the applicable billing cycle or, at the Customer’s election, carry a credit balance forward to be applied to future billings. Avoided cost is listed in the CSPP rate sheet, which is updated annually. The Utility may revise its avoided costs rate at any time and from time to time.
	3. Obligation for Other Charges. Regardless of whether the Customer Generator is entitled to receive financial credit for excess electrical energy delivered to the Utility, Customer Generators remain responsible for all charges incurred during each billing period including, but not limited to: customer charges, facilities charges, demand charges, environmental charges, transmission charges, any late payment charges, and any requirements for deposits or special charges or fees that may be applied.

## Part 4. INTERCONNECTION APPLICATION

Application No. \_\_\_\_\_\_\_

SABULA MUNICIPAL ELECTRIC UTILITY

Application for Interconnection and

Metering of Customer-Owned Generation

This Application for Interconnection and Metering of customer-owned distributed generation is considered complete when it provides all applicable and correct information required below. Additional information or clarification to evaluate the Application may be requested by the Utility.

#### Processing Fee

* For systems with a rated output of 10 kW or fewer, a non-refundable processing fee of $50 must accompany this Application.
* For all other systems, a non-refundable processing fee of b must accompany this Application. PART 1

#### CUSTOMER

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ City: State: Zip:

Telephone (Day): (Evening):

Fax: E-Mail Address:

CONTACT (if different from Customer) Name:

Address:

City: State: Zip:

Telephone (Day): (Evening):

Fax: E-Mail Address:

Owner of the facility:

#### PROJECT DESIGN/ENGINEERING (ARCHITECT) (as applicable) Company:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mailing Address:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ City:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_County:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State:\_\_\_\_\_\_\_\_\_\_\_\_\_Zip Code:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Phone Number:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Representative:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Email Address:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Fax Number:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ELECTRICAL CONTRACTOR (as applicable) Company:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Mailing Address:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ City:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_County:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_State:\_\_\_\_\_\_\_\_\_\_\_\_\_Zip Code:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Phone Number:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Representative:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Email Address:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Fax Number:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Generating Facility Information Location (if different from above):

Inverter Manufacturer:

Model

Nameplate Rating: (kW) \_\_\_\_\_\_\_\_ (kVA) \_\_\_\_\_\_\_\_

System Design Capacity: \_\_\_\_\_\_\_\_\_ (kW) \_\_\_\_\_\_\_ (kVA)

Energy Source: Photovoltaic ❑ Wind ❑ Microturbine ❑

 Diesel Engine ❑ Gas Engine ❑ Combustion Turbine ❑

 Other (describe) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is the equipment UL1741 Listed? ❑ Yes ❑No

If Yes, attach manufacturer’s cut-sheet showing UL1741 listing

Estimated Installation Date: \_\_\_\_\_\_\_\_\_\_\_\_\_ Estimated In-Service Date: \_\_\_\_\_\_\_\_\_\_\_\_

List components of the Small Generating Facility equipment package that are currently certified:

Equipment Type Certifying Entity

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
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ESTIMATED LOAD, GENERATOR RATING AND MODE OF OPERATION INFORMATION

The following information is necessary to help properly design the Utility customer interconnection.

This information is not intended as a commitment or contract for billing purposes.

Total Site Load \_\_\_\_\_\_\_\_\_\_ (kW)

Residential \_\_\_\_\_\_\_\_\_\_\_\_ Commercial \_\_\_\_\_\_\_\_\_\_\_ Industrial \_\_\_\_\_\_\_\_\_\_

Generator Rating \_\_\_\_\_\_\_\_\_\_ (kW) Annual Estimated Generation \_\_\_\_\_\_\_\_\_ (kWh)

Mode of Operation

Isolated \_\_\_\_\_\_\_\_ Paralleling \_\_\_\_\_\_\_\_ Power Export \_\_\_\_\_\_\_\_\_

DESCRIPTION OF PROPOSED INSTALLATION AND OPERATION

Give a general description of the proposed installation, including a detailed description of its planned location, the date you plan to operate the generator, the frequency with which you plan to operate it and whether you plan to operate it during on or off-peak hours.

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DESCRIPTION OF BATTERY OR OTHER ENERGY STORAGE DEVICES

Give a general description of any proposed battery or other energy storage devices relating to, or which may be charged by, the Generating Facility or energy delivered by the Utility. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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(Complete all applicable items. Copy this PART 2 as necessary for additional generators)

SYNCHRONOUS GENERATOR DATA

Unit Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_Total number of units with listed specifications on site: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Date of manufacture: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Serial Number (each):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phases: Single ❑ Three ❑ R.P.M.: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Frequency (Hz): \_\_\_\_\_\_\_\_\_\_\_\_\_

Rated Output (for one unit): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Kilowatt \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Kilovolt-Ampere

Rated Power Factor (%): \_\_\_\_\_\_\_\_\_\_\_ Rated Voltage (Volts): \_\_\_\_\_\_\_\_\_\_\_ Rated Amperes: \_\_\_\_\_\_\_\_\_\_\_\_\_

Field Volts: \_\_\_\_\_\_\_\_\_\_\_\_\_ Field Amps: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Motoring power (kW): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Synchronous Reactance (Xd): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_KVA base

Transient Reactance (X’d): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_KVA base

Subtransient Reactance (X’d); \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_KVA base

Negative Sequence Reactance (Xs): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_KVA base

Zero Sequence Reactance (Xo): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_KVA base

Neutral Grounding Resistor (if applicable):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

I22t or K (heating time constant): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Additional information: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

INDUCTION GENERATOR DATA

Rotor Resistance (Rr):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ohms Stator Resistance (Rs): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ohms

Rotor Reactance (Xr):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ohms Stator Reactance (Xs): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ohms

Magnetizing Reactance (Xm):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ohms Short Circuit Reactance (Xd”): \_\_\_\_\_\_\_\_\_\_\_ ohms

Design letter:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Frame Size: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Exciting Current:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Temp Rise (deg Co): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Reactive Power Required:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Vars (no load), \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Vars (full load) Additional

information:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ PRIME MOVER (Complete all applicable items)

Unit Number: \_\_\_\_\_\_\_\_\_\_\_\_\_ Type: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Serial Number:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date of manufacture: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

H.P. Rated: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ H.P. Max.: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Inertia Constant: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ lb.-ft.2

Energy Source (hydro, steam, wind, etc.) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

GENERATOR TRANSFORMER (Complete all applicable items)

TRANSFORMER (between generator and utility system)

Generator unit number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date of manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Serial Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

High Voltage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ KV, Connection: delta wye, Neutral solidly grounded?\_\_\_\_\_\_\_\_\_\_\_

Low Voltage: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ KV, Connection: delta wye, Neutral solidly g rounded? \_\_\_\_\_\_\_\_\_\_ Transformer Impedance(Z): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ KVA base.

Transformer Resistance (R): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ KVA base. Transformer Reactance (X): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_% on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ KVA base.

Neutral Grounding Resistor (if applicable): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ INVERTER DATA (if applicable)

Manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Model: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rated Power Factor (%): \_\_\_\_\_\_\_\_\_\_Rated Voltage (Volts): \_\_\_\_\_\_\_\_\_\_ Rated Amperes: \_\_\_\_\_\_\_\_\_\_\_

Inverter Type (ferroresonant, step, pulse-width modulation, etc.): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Type commutation: forced line

Harmonic Distortion: Maximum Single Harmonic (%) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Maximum Total Harmonic (%) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Note: Attach all available calculations, test reports, and oscillographic prints showing inverter output voltage and current waveforms.

POWER CIRCUIT BREAKER (if applicable)

Manufacturer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Model: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Rated Voltage (kilovolts): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Rated ampacity (Amperes)\_\_\_\_\_\_\_\_\_\_\_\_\_

Interrupting rating (Amperes): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_BIL Rating: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Interrupting medium / insulating medium (ex. Vacuum, gas, oil ) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ / \_\_\_\_\_\_\_\_\_\_\_

Control Voltage (Closing): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Volts) AC DC

Control Voltage (Tripping): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Volts) AC DC Battery Charged Capacitor

Close energy: Spring Motor Hydraulic Pneumatic Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Trip energy: Spring Motor Hydraulic Pneumatic Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Bushing Current Transformers: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Max. ratio) Relay Accuracy Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_

Multi ratio? No Yes: (Available taps) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ADDITIONAL INFORMATION

In addition to the items listed above, please provide the following information:

1. Attach a detailed one-line diagram of the proposed facility, all applicable elementary diagrams, major equipment, (generators, transformers, inverters, circuit breakers, protective relays, etc.) specifications, test reports, etc., and any other applicable drawings or documents necessary for the proper design of the interconnection.
2. Describe the project’s planned operating mode (e.g., combined heat and power, peak shaving, etc.), and its address or grid coordinates.

END OF PART 2

#### Customer Signature

I hereby certify that, to the best of my knowledge, the information provided in this Application is true. I agree to provide the Utility with any additional information which may be requested or required to complete the interconnection. I agree to abide by the terms and conditions of the Utility’s Interconnection Standard and will return the Certificate of Completion when the Generating Facility has been installed.

Signature: Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 Utility Use

Contingent Approval to Interconnect the Generating Facility

Interconnection of the Generating Facility is approved contingent upon the terms and conditions of the Utility’s Interconnection Standard and upon return of the Certificate of Completion. Utility Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title: Date:

Application Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Utility waives inspection/witness test? ❑Yes ❑No Initial \_\_\_\_\_\_\_\_\_\_

## Part 5. INTERCONNECTION AND METERING AGREEMENT

THIS AGREEMENT, made and entered into on , 2020, by and between Sabula Municipal

Electric Utility, an Iowa municipal utility ("Utility") and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ operating an alternative energy generation facility in \_\_\_\_\_\_\_\_\_\_\_\_\_ County, Iowa ("Customer");

WITNESSETH:

WHEREAS, Utility operates a municipal electric utility and provides electric utility service at retail to customers in its assigned service area; and,

WHEREAS, Utility obtains its electric power and energy through participation in the North Iowa Municipal Electric Cooperative Association (NIMECA); and,

WHEREAS, Customer is a customer of Utility and purchases electric power and energy from Utility; and,

WHEREAS, Customer owns and operates a 10 kW or less distributed generation facility, which is located in Utility’s Service Territory, (said facility being hereafter referred to as the Distributed Generation Facility) and desires to purchase from Utility emergency and backup electric utility service and to sell to Utility and receive payments or credits for excess electric power and energy generated and delivered by its Distributed Generation

Facility; and,

WHEREAS, Customer desires to interconnect with the electric distribution system of Utility in order to accomplish the foregoing; and,

WHEREAS, the Utility and Customer desire to set forth in this Agreement the terms and conditions pursuant to which the sale of electricity to Customer shall take place, the purchase of electricity from Customer shall take place, payments or credits will be provided to Customer, and interconnection of the Distributed Generation Facility with the facilities of Utility shall be made;

IT IS, THEREFORE, IN CONSIDERATION OF THE MUTUAL COVENANTS HEREINAFTER SET FORTH, AGREED BY AND BETWEEN THE PARTIES AS FOLLOWS:

1. **Electric Service Provided to Customer**
	1. Utility shall furnish, sell and deliver to Customer, and Customer shall purchase from Utility all of the electric power and energy which Customer may need at the location described in Exhibit "A," attached hereto and by this reference made a part hereof, subject to the remaining provisions of this Agreement.
	2. Distribution Electrical service provided by Utility shall be delivered as Alternating Current at 2.4KV delta/2,400 volts primary and 240 volts Secondary at 60 Hz.
	3. Customer shall not use the electric power and energy furnished pursuant to this Agreement as an auxiliary or supplement to any other source of electric power and energy, other than that generated by the Distributed Generation Facility located on its premises, and shall not resell electric power and energy purchased hereunder.
	4. Customer shall pay Utility for service at the rates and upon the terms and conditions as set forth herein and in the Utility’s applicable rate schedule, as adjusted from time to time pursuant to Section A.7 of this Agreement.
	5. Interconnection and the initial billing period relating thereto shall commence after completion of certification by the State Electrical Inspector, inspection by Utility personnel (if required by Utility), installation of Utility-approved metering equipment by Utility personnel pursuant to Section C of this Agreement, and satisfaction of all other terms and conditions of this Agreement for interconnection.
	6. Utility billing and collections for service delivered hereunder shall be handled in accordance with

Utility billing practices as set forth in the Utility’s Service Rules, as revised by the Utility from time to time (the “Service Rules”). In the event Customer fails to make payment of any bills when due for service delivered hereunder, the Utility may discontinue service to the Customer in accordance with the Utility’s Service Rules. Discontinuance of service shall not relieve Customer of any of its obligations under this Agreement.

* 1. Utility may change the rates for service provided under this Agreement in the same manner in which it may modify its rates to its other electric customers. By this reference, such adjusted rates shall be a part hereof as if set forth in full.
	2. The Utility shall use reasonable diligence to provide a constant and uninterrupted supply of electric power and energy. If the supply of electric power and energy shall fail or be interrupted, or become defective through act of God, governmental authority, action of the elements, public enemy, accident, strikes, labor disputes, required maintenance work, inability to secure right-of-way, or any other cause beyond the reasonable control of the Utility, the Utility shall not be liable therefore or for damages caused thereby.
1. **Interconnection Requirements**
	1. All facilities shall meet certain requirements to be eligible for interconnection pursuant to the terms and conditions of this section. Permission to interconnect with the Utility electric system is contingent upon the following conditions:

a. The Customer shall comply with all applicable acceptable standards for interconnection, safety, and operating reliability in order to be eligible for interconnection to the Utility's electric system. Acceptable standards include the most current versions of the following standards, as revised or replaced from time to time:

* + 1. General Requirements for Synchronous Machines, ANSI C50.10-1990.

The standards set forth in ANSI C50.10 are modified as follows: Rule 8.1 “Maximum allowable deviation factor,” is modified to read: “The deviation factor of the open-circuit terminal voltage wave and the current wave at all loads shall not exceed 0.1. Deviation factor shall be as defined in ANSI C42.100-1972.”

* + 1. Requirements for Salient Pole Synchronous Generators and Condensers, ANSI C50.12-1982.
		2. Requirements for Cylindrical-Rotor Synchronous Generators, ANSI C50.13-1989.
		3. Requirements for Combustion Gas Turbine Driven Cylindrical-Rotor Synchronous Generators, ANSI C50.14-1977.
		4. Iowa Electrical Safety Code, as defined in Iowa Administrative Code 199Chapter 25.
		5. National Electrical Code, ANSI/NFPA 70-2011.
		6. IEEE Recommended Practices and Requirements for Harmonic Control in Electrical Power Systems-IEEE Standard 519-1992.
		7. Standard for Interconnecting Distributed Resources with Electric Power Systems, ANSI/IEEE Standard1547-2003.
		8. IEC/TR3 61000-3-7 Assessment of Emission Limits for Fluctuating Loads in MV and HV Power Systems.

For those facilities which are of such design as to not be subject to the standards noted in “1,” “2,” “3,” and “4,” above, data on the manufacturer, type of device, and output current wave form (at full load) and output voltage wave form (at no load and at full load) shall be submitted to the Utility for review and approval prior to interconnection. The Customer shall furnish the Utility with sufficient data in order to verify that all conditions set forth above and in subsections 2, 3, 4, 5, 8, 10 and 15 below are met. Utility approval in writing is required before interconnection is permitted.

1. The Distributed Generation Facility shall be equipped by Customer with automatic disconnection upon loss of electric voltage supplied by the Utility.
2. The Customer shall furnish and install an overcurrent device on the Distributed Generation Facility to automatically disconnect the facility at all currents that exceed the full-load current rating of the facility.
3. In order to provide adequate safety to Utility's employees and the Utility’s system, Customer shall furnish, install and maintain a manual disconnect switch between the Distributed Generation Facility and the Utility's system in order that the Distributed Generation Facility may be positively disconnected and isolated from Utility's system. The location of the switch shall be determined and approved by the Utility and shall be housed in an approved enclosure which shall be secured with a padlock or other locking device. Both the operator of the Distributed Generation Facility and the Utility shall have access to the switch at all times. If the Utility needs to isolate the Distributed Generation Facility, the Utility shall not be held liable for any damages resulting from the actions necessary to isolate the facility.
4. Customer facilities that produce a terminal voltage prior to the closure of the interconnection shall be equipped by the Customer with synchronism check devices to prevent closure of the interconnection under conditions other than a reasonable degree of synchronization between the voltages on each side of the interconnection switch.
5. The Distributed Generation Facility shall be subject to disconnection at any time without notice by the Utility in the event the Utility determines that the facility causes unacceptable safety, voltage, or frequency conditions, service interruption, or communications interference.
6. The Customer shall regularly inspect the Distributed Generation Facility to determine necessity for replacement and repair, maintain and service the Distributed Generation Facility for safe and reliable operation and maintain a record or log, available for inspection by the Utility at any time, showing when the facility is shut down for repairs or maintenance, the maintenance or repair completed, and when the facility is placed back in service. If requested by the Utility, the customer shall submit to the Utility a maintenance schedule, prior to October 1, of each year, for the following calendar year.
7. The Customer shall insure, indemnify and hold harmless the Utility and its officers, directors, employees, agents and representatives from and against all claims, causes of action, liability, injuries, damages and costs of any kind, including but not limited to injury and damages to persons, property and the Utility’s electric system, and attorney fees and costs, caused, directly or indirectly, by the Distributed Generation Facility and any related equipment, the Customer’s operation of such facilities and equipment, or any failure of the Customer to maintain such facilities and equipment in satisfactory and safe operating condition. The Customer will arrange for and maintain liability insurance in the amount of $1,000,000. The required liability insurance for non-residential customers of the Utility shall include contractual liability. The Utility may adjust the required amount of insurance from time to time in its discretion and shall provide Customer with sixty days written notice of any increase in the required amount of insurance. Failure to maintain required insurance and proof of financial responsibility shall be cause for disconnection. The Utility shall be named as an additional insured under the required insurance policy.
8. The Customer shall reimburse the Utility for all costs incurred by Utility for the connection, switching, metering, transmission, distribution, safety provisions and administrative costs directly related to the installation and maintenance of the physical facilities necessary to permit interconnected operations with the Distributed Generation Facility (the “Interconnection Costs”).
9. The Customer shall be responsible for the costs of installation and maintenance of power factor correction capacitors required to maintain the equivalent of an average power factor of 96% (lagging) or better at the interconnection.
10. The Customer’s electric generating equipment shall be designed, operated and maintained in such a manner that it does not adversely affect the Utility’s voltage wave form.
11. Utility reserves the right to require Customer to provide at its expense suitable apparatus for filtering to avoid interference with telephone, radio, television, or other electronic signal reception caused by electrical equipment and apparatus on Customer's premises. Failure of Customer to provide filtering when requested by the Utility shall be grounds for disconnection of the Distributed Generation Facility.
12. Customer shall comply with all applicable laws, rules and regulations governing the operation of its Distributed Generation Facility.
13. Operation of the Distributed Generation Facility must not cause any reduction in the quality of service provided to other customers of Utility or interfere with the operation of the Utility's system. Customer shall take such corrective action as may be necessary in order to eliminate such condition, and shall reimburse the Utility for any costs incurred by the Utility in correcting or eliminating such conditions.
14. The electrical characteristics of the Distributed Generation Facility shall conform with standards established by NEC Article 705, as revised or replaced from time to time.
15. The Utility may request that a Distributed Generation Facility make a "best effort" to provide energy to the Utility during a system emergency.
16. The Utility reserves the right to open and lock the disconnect switch, thereby isolating Customer's Distributed Generation Facility, without prior notice to Customer, for any of the following reasons:
	1. System emergency and/or maintenance operations, which require such action.
	2. The existence of potentially hazardous (to persons or property) conditions relating to the Distributed Generation Facility.
	3. Interference with the quality of service provided to other customers, and/or the operation of the Utility's system, caused by or resulting from the operation of the Distributed Generation Facility.
	4. All other reasons for disconnection set forth in this Agreement.
17. Customer shall permit the Utility’s representatives to enter upon Customer's property at any reasonable time for the purpose of inspecting or testing Customer's equipment, facilities or apparatus and the accuracy of Utility's metering equipment, but such inspections shall not relieve Customer of the obligation to maintain Customer's facilities in satisfactory operating condition and to comply with all terms of this Agreement. The Utility may charge the direct expense of such inspecting or testing of Customer's equipment, facilities or apparatus to Customer, unless Customer can demonstrate the inspecting and testing was not necessary.
18. Battery storage systems, energy storage devices, hybrid generation-storage systems, plug-in electric vehicles and plug-in hybrid vehicles: Customer shall not store energy generated by the Distributed Generation Facility or energy delivered by the Utility, in either case for sale or delivery of such energy to the Utility. Customer shall not deliver any stored energy to the Utility, and Utility shall have no obligation to make payment or provide credit for any such energy delivered by Customer.
19. Modification of Distributed Generation Facility: The Customer must provide the Utility with written notice, and must receive written authorization from the Utility, before making any changes to the Distributed Generation Facility. If the Customer makes such modifications without the Utility’s prior written authorization, the Utility shall have the right to disconnect the Distributed Generation

Facility. **C. Metering.**

1. The Utility will install metering equipment at the point of service to the Distributed Generation Facility. Said metering shall include separate metering for the Distributed Generation Facility, such that the Utility’s sale and delivery of energy to Customer, and Customer’s sale and delivery of energy generated by the Distributed Generation Facility to the Utility, shall be separately metered.
2. The Utility shall pay the costs of metering the sale and delivery of energy to Customer, and Customer shall pay all costs of metering the sale and delivery of energy generated by the Distributed Generation Facility to the Utility.
3. The Utility shall have the right to install such additional metering equipment as it deems necessary for the collection of data for research purposes, which metering will be furnished and paid for by the Utility.
4. Meters shall be read by the Utility.

**D. Billing and Calculation of Credits to Customer for deliveries to Utility.**

1. The Customer shall be responsible for payment of any applicable customer charge or obligation set forth in this Agreement or the Utility’s rate schedule or other applicable charges approved by the Utility that are not calculated on the basis of metered measurement, as set forth herein and on the Utility’s rate schedule as revised by the Utility from time to time.
2. For charges collected on the basis of metered registration, the Utility shall, for each monthly billing period, determine the “net meter registration” of the Distributed Generation Facility by comparing the directional energy flow in each direction. The net meter registration shall be determined according to the metering provided under Section C of this Agreement. The net meter registration shall be determined by netting the amount of energy delivered in each direction during the billing period per the separate meters.
3. Negative Net Consumption. Whenever the amount of electricity delivered by an eligible Customer Generator in a billing period is more than the electricity supplied by the Utility in a billing period, the Utility shall credit the Customer Generator for the excess kilowatt-hours for use in subsequent billing periods. At the end of the last billing period in each calendar year, the Utility shall pay for such excess of energy at the Utility’s avoided costs rate in effect on the last day of the applicable billing cycle or, at the Customer’s election, carry a credit balance forward to be applied to future billings. Avoided cost is listed in the CSPP rate sheet, which is updated annually. The Utility may revise its avoided costs rate at any time and from time to time. “Avoided cost” is the wholesale cost used by Alliant Energy and published in its CSPP Tariff Information, which is updated annually.
4. If the net meter registration shows the deliveries of energy in kWh from the Utility to the Customer exceed the deliveries of energy in kWh from the Distributed Generation Facility to the Utility for the applicable billing period, the Customer shall pay the Utility for the net amount of energy delivered by the Utility at the rate applicable to its type or class of electric service pursuant to the Utility’s rate schedule in effect on the last day of the applicable billing cycle).
5. The Utility shall make no payments nor provide credits to Customer for capacity except in the case of an express written agreement for the purchase of capacity from Customer, signed by the parties following authorization by the Utility’s governing body.
6. Any and all fees and charges relating to the interconnection of the Distributed Generation Facility, whether applicable prior to interconnection, at the time of interconnection or at any time in the future, which may be charged or assessed to the Utility by a regional transmission organization (RTO), the Federal Energy Regulatory Commission (FERC), any other regulatory body, or any other entity which has the legal or contractual authority to require payment of fees and charges relating to interconnection, shall be passed on to Customer by the Utility at cost by direct billing or by netting such fees and charges against any amount which may be payable to Customer by the Utility.

 **E. Notice.**

1. Any notice, demand, or request required or authorized by this Agreement to be given by one party to another party shall be in writing. Such notice shall be sent by facsimile, electronic messaging (confirmed by telephone), courier, personally delivered or mailed, postage prepaid, to the representative of the other party designated in this Section E. Any such notice, demand, or request shall be deemed to be given (a) when received by facsimile or electronic messaging, (b) when actually received if delivered by courier or personal delivery, (c) three (3) days after deposit in the United States mail, if sent by first class mail, or (d) when received at the address of the receiving party, if mailed by prepaid certified mail or by prepaid overnight delivery via the United States Postal

Service, Federal Express, Airborne or United Parcel Service.]

1. Notices and other communications by Utility to Customer shall be addressed to:

[NAME

ADDRESS

TELEPHONE

FACSIMILE

E-MAIL]

1. Notices and other communications by Customer to Utility shall be addressed to:

[NAME OF UTILITY

NAME OF POSITION

ADDRESS

TELEPHONE

FACSIMILE

E-MAIL]

 **F. Miscellaneous.**

1. This Agreement shall be subject to all applicable federal, state, and local laws and regulations, including but not limited to those relating to allocation of power.

1. This Agreement shall become effective on the date and year first above written. This Agreement shall be terminated six (6) months after such date if the Distributed Generation Facility has not been placed in service and thus has not generated any energy. Provided the Distributed Generation

Facility is in service and has generated energy as stated in the previous sentence, this Agreement shall remain in effect for a term of one (1) year from and after the commencement of the initial filling period. This agreement shall thereafter continue for successive terms of one (1) year each, unless terminated by either party giving the other not less than three (3) months' written notice of its desire to terminate this Agreement.

1. Neither party may assign any right or obligation under this Agreement, in whole or in part, without the other party’s prior express written consent. Subject to the foregoing, this Agreement shall be binding upon the parties, and upon their respective successors and assigns.

1. Notwithstanding anything herein to the contrary, in the event of a material breach of this Agreement by Customer the Distributed Generation Facility shall be subject to disconnection, and the Utility may terminate this Agreement with thirty (30) days’ written notice to Customer if Customer fails to cure such breach within said thirty (30) day period. Such notice may be given by mail, e-mail or facsimile and shall be considered received by Customer on the date such notice is mailed, e-mailed or faxed by the Utility.

1. This Agreement shall terminate if Customer moves from the residence or business address associated with this Agreement. Any new resident or occupant at such address who seeks to interconnect the Distributed Generation Facility must submit an application and enter into a new agreement with the Utility. Notwithstanding the foregoing, this Agreement may be transferred and assigned to a new resident or occupant only with the Utility’s prior written approval, which approval may be granted or denied in the utility’s discretion.

1. Termination of this Agreement shall not relieve Customer of any of its obligations for amounts due under this Agreement and its indemnification obligations under this Agreement.

1. Together with the Utility’s Service Rules, Interconnection Standards, and rate schedule, each as revised by the Utility from time to time, this Agreement constitutes a complete understanding of the parties with respect to the subject matter herein and supersedes and replaces all prior understandings, promises, representations, and agreements, written or oral, relating thereto. The parties may amend this agreement only by written amendment signed by the parties and authorized by the Utility’s governing body.

1. The failure of either of the parties to enforce any right or provision under this Agreement shall not constitute a waiver of such right or provision unless acknowledged and agreed to by such party in writing. No waiver shall be implied from a failure of either party to exercise a right or remedy. In addition, no waiver of a party’s right or remedy will affect the other provisions of this Agreement.

1. The terms of this Agreement are separable so that if any term or provision is invalid or unenforceable, that term will be interpreted or modified to make it valid or enforceable, or that term will be deleted if incapable of being interpreted or modified to make it valid or enforceable, and the rest of this Agreement will remain in full force and effect.

**IN WITNESS WHEREOF**, the parties hereto have executed this Agreement on the day and year first above written.

 SABULA MUNICIPAL ELECTRIC UTILITY CUSTOMER

 By \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ By\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 (Printed name)

## Part 6. CERTIFICATE OF COMPLETION

 **And**

## Part 7. APPROVAL TO ENERGIZE GENERATING FACILITY

 **SEE NEXT PAGES**

CERTIFICATE OF COMPLETION

Application No. \_\_\_\_\_\_\_

#### SABULA MUNICIPAL ELECTRIC UTILITY

Is the Generating Facility installed, tested and ready for operation? Yes\_\_\_\_\_\_ No \_\_\_\_\_\_

Customer: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Telephone (Day): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Evening):

Fax: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ E-Mail Address:

Location of the Generating Facility (if different from above):

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Electrician/Service Company:

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Address: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

City/State/ZIP: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Telephone (Day): \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Evening): Fax: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ E-Mail Address:

License number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Application number: \_\_\_\_\_\_\_\_\_\_\_

Inspection:

The Generating Facility has been installed and inspected in compliance with applicable electrical codes.

A copy of the signed electrical inspection form is attached.

##### Customer Signature

I hereby certify that, to the best of my knowledge, the information provided in this Certificate of Completion is true. I agree to provide the Utility with any additional information which may be requested. I agree to abide by the terms and conditions of the Utility’s Interconnection Standard.

Signature: Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

APPROVAL TO ENERGIZE GENERATING FACILITY

Application No. \_\_\_\_

#### SABULA MUNICIPAL ELECTRIC UTILITY

The Utility, having entered into an Interconnection Agreement for the facility described in the Application noted by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and having received a Certificate of Completion with proper documentation of the electrical inspection hereby authorizes the Generating Facility to be energized:

##### Utility Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Title: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_